

Apprenticeable Occupations in Montana

A Directory of Occupations that are Recognized as Apprenticeable Occupations by the State of Montana

1996

Compiled by
Montana Career Information System
and
Montana State Occupational Information Coordinating Committee

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Montana Career Information System

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Montana State Occupational Information Coordinating Committee Montana Career Information System

The Montana State Occupational Information Coordinating Committee and the Montana Career Information System (SOICC/MCIS) provide information about occupations, programs of study, financial aid and schools to students, job seekers, and career-changers in Montana.

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Acknowledgments

The information in this publication was compiled by SOICC/MCIS, with the cooperation of the Department of Labor and Industry, Job Service Division, Apprenticeship Section

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INTRODUCTION

Apprenticeship programs provide on-the-job training and related classroom instruction in a skilled craft or trade.

The United States Department of Labor recognizes more than 830 occupations as apprenticeable. Most apprenticeships are in construction, manufacturing, transportation, and services. Apprenticeship training is the major way to prepare for some occupations, such as plumber or electrician. For many other occupations, such as carpenter, baker, or machinist, apprenticeship is one of several ways to prepare for fully qualified, or "journey level" positions.

Apprenticeship programs usually include three to four years of training, although some last five years. Some programs, generally called "Training," last one year or less. During this time, apprentices work with a skilled journey-level worker. With the journeyworker's guidance, the apprentice learns the skills of a trade and gradually learns to perform the work independently. Related classroom instruction is part of the training program.

Apprenticeship programs are sponsored by labor unions, employers, or a combination of the two. The sponsor plans, administers, and pays for the program. The worker (apprentice) signs a written employment agreement and is a full-time, paid employee of the company where he or she is apprenticed. An apprentice's starting wage varies from 40 to 75 percent of the journey-level wage, with the average being about 50 percent. (Wages are never less than the state or federal minimum wage.) Wages are increased periodically until they equal the journeyworker rate at the end of the apprenticeship. When apprentices finish their training, they receive a certificate of completion issued by the State Apprenticeship and Training Program or by the Bureau of Apprenticeship and Training.

PROGRAM ADMISSION

In most apprenticeable trades there is a local committee, composed of management and labor, that selects apprentices. There are written standards for each occupation. Requirements vary among occupations and areas, but most include:

- a minimum age (usually 18), and
- a high school diploma or its equivalent.

Some programs also require:

- specific course work;
- the physical ability to work in the trade; and
- a passing score on an aptitude test.

Apprenticeship committees give applicants points for their experience in the trade, knowledge of the trade, and grades in trade-related courses. Applicants with the highest number of points are selected for the program. There are many more applicants than apprenticeship openings in some trades and locations. Those selected often have more trade-related experience, more education and higher grades than are required in the standards.

For more information about apprenticeships, contact one or more of the following:

- Department of Labor and Industry, Job Service Division, Apprenticeship Section, P.O. Box 1728, Helena, MT, 59624; (406) 444-4500;
- A labor union office:
- The local Job Service office; or
- An employer's office.

TYPICAL COURSE WORK

Classroom instruction is designed to provide apprentices with knowledge in technical subjects related to their trade. For example, construction apprenticeships may include course work in blueprint reading, carpentry, iron work, and concrete work. At least 144 hours of related classroom instruction are required during each year of apprenticeship training. Classes are taught by journeyworker instructors and are usually held at night through public educational facilities such as community colleges or vocational-technical schools. In some programs, apprentices complete classroom instruction before starting their training on the job.

GRADUATION REQUIREMENTS

The apprentice must show satisfactory progress on the job and in related classroom instruction. To master a particular trade, an apprentice must learn and perfect each skill and bring those skills up to the speed and accuracy required of the job. A good attendance record is also important.

THINGS TO KNOW

There is often a long wait between selection as an apprentice and assignment to a job. In some trades, apprentices are responsible for finding their own jobs.

One construction trade study shows that apprentices get broader training than people who learn the trade informally. Journey-workers who were trained through formal apprenticeship programs may not receive higher wages than those trained informally on the job, but they work in the trade longer, and more of them become supervisors.

Students who have appropriate work experience in an apprenticeable trade or in a trade requiring an exam by a state board may obtain up to 21 credit hours towards an applied technology major for teacher education from MSU-Northern. For more information, contact the Director of Education, MSU-Northern, Havre, MT 59501, (406)264-3738.

APPRENTICESHIP SELECTION COMMITTEE CONCERNS & QUESTIONS

For many apprenticeship programs, applicants are interviewed by a selection committee. The following lists some general concerns of committees, hints on how applicants can deal with those concerns, and examples of questions that may be asked during the interview.

Note: The specific concerns and the actual questions will vary with the trade and the committee. To meet federal requirements for Equal Employment Opportunity and Affirmative Action, a committee for a specific apprenticeship program will ask all applicants the same questions.

There are several things committee members want to know about.

DESIRE AND PERSISTENCE

Explain why you want to enter the trade.

Tell how you became interested in the trade.

Let the committee know if you have ever applied to this or any other trade before.

KNOWLEDGE OF THE TRADE

Do some homework on the trade.

Observe the workers and see the environment you'd be working in.

Describe some of the jobs the workers perform.

Talk about the tools and equipment used in the trade.

Know how long the apprenticeship program is.

Know what the wages are for apprentices and journeypersons.

Do some homework on other trades, too. Show you've been exposed to many other trades and explain your reasons for choosing this particular trade over others.

WORK EXPERIENCE

Describe any work experience that may be related to the trade or that may have provided exposure to the trade.

Relate any experience where you have a favorable work record (good references, attendance, and long-term employment).

PERSONAL EXPERIENCE

Describe hobbies or other activities that show mechanical ability or physical strength and that may be related to the trade (for example, doing minor repairs around the house, using hand tools, servicing your car, and planning the family budget).

SAMPLE INTERVIEW QUESTIONS

The following are sample questions that may be asked during the interview. You should answer all questions as completely as possible. It is your responsibility to tell the committee about all of your trade-related interests, activities, awards, and experiences.

1)	Why do you want to be a?
2)	Why did you choose over some other trade?
3)	Construction sites are cold in winter, hot in summer; they can be muddy and wet. What makes you consider working in these conditions?
4)	What kinds of work have you done in the past?
5)	Do you have any paid or unpaid work experience or hobbies that relate to this trade?
6)	Can you travel? (Asked only if traveling is required.)
7)	Do you have transportation taken care of?
8)	(If the applicant has any college.) I see you went through years of college. Why aren't you working in the field for which you trained?
9)	How do you feel about going to school as part of your apprenticeship?
10)	Is there anything else that you would like to tell us about yourself?

A general question such as Question 10 provides you with the opportunity to describe anything that was not covered by previous questions and that you think is important.

AIRCRAFT MECHANICS

Aircraft mechanics service, repair, and overhaul aircraft and aircraft engines to ensure safe and dependable performance. Aircraft mechanics often consult manuals and service bulletins for specifications and diagnosis of problems. They inspect, service, and adjust aircraft engines, wiring, brakes, landing gear, and flight controls. Aircraft mechanics are known as airframe and power plant technicians.

D.O.T. Code 621.281-014

Working Conditions

Mechanics usually work in hangars or in other indoor areas. However, if the hangers are full or if repairs must be made quickly, they work outdoors, sometimes in unpleasant weather. Mechanics often work under pressure to maintain flight schedules while maintaining safety standards. Mechanics frequently lift or pull as much as 50 pounds. They often stand, lie, or kneel in awkward positions. Occasionally mechanics must work in precarious positions on scaffolds or ladders. Noise and vibration are common when testing engines.

Employers

Airlines, independent repair shops, aircraft dealers, other air carriers, aerial surveyors, helicopter logging operators, crop spraying firms, the military. Some are self-employed.

Physical Requirements

Good health, vision
Able to lift heavy parts and tools
Agility
Able to work in high places

Helpful School Subjects

Mechanical Drawing
Auto Mechanics
Wood Shop
Welding
Physics
Metal shop
Electrical Shop
Chemistry

Licensing Requirements

For airframe or powerplant mechanics:

- 1. Be at least 18 years of age.
- 2. Graduation certificate from a certified aviation maintenance technician school (Part 147) or.
- 3. 18 months of practical experience.
- 4. Satisfactory completion of written, oral, and practical exams.

For airframe-and-powerplant mechanics:

- 1. Be at least 18 years of age.
- 2. Graduation certificate from a certified aviation maintenance technician school (Part 147) or,
- 3. 30 months of practical work experience with both engines and airframes.
- 4. Satisfactory completion of written, oral, and practical exams.

License Renewal

Once issued, licenses are valid for life unless revoked.

Fees

Exam \$180

For Details and Licensing Application Materials, Contact

Federal Aviation Administration Flight Standards District Office 2725 Skyway Drive, Suite 1 Helena, MT 59601 (406) 449-5270 (800) 457-9917

Union Affiliation

May or may not be affiliated with the International Association of Machinists and Aerospace Workers.

Additional Information

Length of this apprenticeship program is three years. Must have a high school diploma and be at least 18 years. May require aptitude tests. Most work in large cities at the airlines' main stops. Experience in auto repair helpful. Employment opportunities best for those with a combination airframe and powerplant license as well as an aircraft inspector license. Airline employment competition is keen because wages are higher with more benefits. Most employers prefer vo-tech graduates or experienced mechanics as apprentices. For addresses of airline companies, write to: Air Transportation Association of America, 1709 New York Ave. NW, Washington, DC, 20006.



Occupational Information

Current Employment

About 173 are employed in this small occupation in Montana. In addition, others are self-employed. There were four active airframe and powerplant apprentices in Montana in 1995.

Wages

The average entry wage is \$7.69/hour; the average wage is \$10.73/hour. Trainees start at \$5.50/hour. In Montana state government, airplane mechanics earn an average wage of \$9.95/hour. Major airlines pay more but employ few mechanics in Montana. Federal government jobs pay an average wage of \$15.55/hour.

Outlook

Employment is projected to show little to no growth. The outlook depends mainly on the amount of aviation activity and the priority placed on aircraft maintenance. In Montana, few aircraft mechanics work for scheduled airlines. Most work on general aviation aircraft used for taxi, agricultural, pilot training, and private purposes. Mechanics who want to work for major airlines must be willing to relocate outside the state.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 3116 CIS for Windows - Aircraft Mechanics

APPLIANCE REPAIRERS

Appliance repairers work on such labor-saving appliances as microwave ovens, washers and dryers, dishwashers, and ranges. Repairers usually specialize in servicing either portable appliances, such as toasters and vacuum cleaners, or major appliances such as furnaces, water heaters, refrigerators, freezers, washers, and dryers. To determine why an appliance is not working properly, repairers inspect it while in operation to detect unusual noises, overheating, or excess vibration. They then make the necessary adjustments or part replacements to put the appliance into operating condition.

D.O.T. Codes: 827.261-010, 637.261-018

Working Conditions

Repair shops are usually quiet, well lighted and adequately ventilated. Outside the shop, the repairer may sometimes work in narrow spaces and uncomfortable positions amid dirt and dust. Those who repair appliances in homes may spend several hours a day driving.

Employers

Appliance retail shops, service and repair shops. Many are self-employed.

Physical Requirements

Ability to climb, balance, stoop, lift, and kneel Good eyesight Good use of hands and arms Mechanical aptitude

Helpful School Subjects

Electronics Shop
Math Physics
Public Speaking Chemistry

Blueprint Reading

Additional Information

Length of this apprenticeship program is three years. High school graduate and postsecondary technical training preferred. Experience preferred in electronics or applied electricity. Periodic retraining required. Valid driver's license required. Worker provides own set of tools. May require some weekend work.



Occupational Information

Current Employment

About 180 are employed as electric home appliance and power tool repairers in Montana. In addition, others are self-employed. There was one active apprentice in 1995.

Wages

The average entry wage is \$6.69/hour and the average wage is \$9.59/hour. Earnings vary widely according to skill, geographic location and type of equipment serviced. Some appliance repairers earn commissions.

Outlook

Employment is projected to grow as fast as the statewide average for all occupations in Montana. The outlook depends on the numbers of households and family income levels, which influence consumer demand for appliances. Technological advances affect the outlook. Newer appliances require less maintenance. Most job openings will result from the need to replace repairers who leave the occupation. Prospects will be best for those who keep up with changing technology, repair newer appliances, and have electronics knowledge. Most job opportunities involve work on larger appliances.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 3169 CIS for Windows - Appliance Repairers

AUTO BODY REPAIRERS

Auto body repairers straighten bent frames, remove dents, and replace auto body parts damaged beyond repair. Repairers smooth out small dents and creases with hammers and use plastic or solder to fill small dents that cannot be worked out. Some body repairers replace safety glass. Others specialize in fiberglass bodies. Body repairers usually work by themselves with only general directions from supervisors. In large body shops, body repairers may specialize in one type of repair. Some do painting.

D.O.T. Code 807.381-010

Working Conditions

Auto body repairers work indoors in body shops which are noisy because of the banging of hammers against metal and the whir of power tools. Most shops are well ventilated, but often they are dusty and smell of paint. Body repairers often work in awkward or cramped positions and much of their work is strenuous and with dirty objects. Hazards include cuts from sharp metal edges, burns from torches and heated metal, and injuries from power tools.

Employers

Auto repair and paint shops; service departments of car and truck dealers. Some are self-employed.

Physical Requirements

General good health

Stamina

Good eye-hand coordination

Good color perception

Ability to lift up to 75 pounds

Ability to work in a closed space with noise, dust, and chemical fumes

Helpful School Subjects

Metalworking Auto Mechanics

Drafting Welding Math Painting

Metallurgy

Union Affiliation

May or may not be affiliated with the International Association of Machinists and Aerospace Workers (Automotive Trades).

Additional Information

Length of this apprenticeship program is four years. Must be at least 17 years old. Joint Apprenticeship and Training Committee requires high school diploma or equivalent and aptitude test. Employment available both in small and large towns, but union shops are

more prevalent in larger towns. Career advancement opportunities limited. Job opportunities better for applicants with previous related experience through a vo-tech, military service, etc. The Montana Automobile Dealers' Association manages an apprenticeship program in Montana; their address is 501 North Sanders, Helena, Montana 59601.



Occupational Information

Current Employment

About 691 are employed in this medium-sized occupation in Montana. In addition, others are self-employed. There were 10 active apprentices in Montana in 1995.

Wages

The average entry wage in Montana is \$6.26/hour; the average wage is \$10.16/hour. Helpers usually earn 30 to 60 percent of the hourly rate for skilled workers. Some earn on an incentive basis. Very experienced workers usually earn 40 to 50 percent of the labor cost charged to the customer.

Outlook

Employment is projected to increase faster than the statewide average for all occupations in Montana. The outlook depends on the number of damaged automobiles requiring body work. The growing practice of maintaining old cars instead of buying new ones has increased the car repair business. Traffic accidents are expected to increase as the number of motor vehicles increases. New types of alloys, aluminum, and plastics used in vehicle construction are more difficult to repair and the repairs take longer to complete. The new, lighter weight automotive designs are prone to greater collision damage than older, heavier designs.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 5486 CIS for Windows - Auto Body Repairers

AUTOMOBILE MECHANICS

Automobile mechanics use a variety of tools in their work. They use power tools such as pneumatic wrenches to remove bolts quickly; machine tools such as lathes and grinding machines to rebuild brakes and other parts; welding and flame cutting equipment to remove and repair exhaust systems and other parts; jacks and hoists to lift cars and engines; and common hand tools such as screwdrivers, pliers, and wrenches to work on small parts and get at hard-to-reach places. Most automobile mechanics perform a variety of repairs while others specialize. Some of the specialists include automatic transmission mechanics, tune-up mechanics, automobile air conditioning mechanics, front-end mechanics, brake repairers, and automobile radiator mechanics.

Automotive electricians repair and overhaul electrical systems in automotive vehicles. They talk with customers to determine the nature of electrical malfunctions. Electricians then determine the malfunction by visual inspection. They use testing devices, such as oscilloscopes, voltmeters, and ammeters.

D.O.T. Codes: 620.261-010, 620.281-038, 620.281-062, 620.281-066, 825.281-022

Working Conditions

Modern automobile repair shops are well ventilated, lighted, and heated. Some older shops may not be so modern. Mechanics frequently work with dirty and greasy parts and in awkward positions. They often must lift heavy parts and tools. Minor cuts and bruises are common.

Employers

Car dealers, rental agencies, automobile repair shops, service stations, auto supply stores, public agencies, the military. One in five is self-employed.

Physical Requirements

Good health

Normal vision and hearing

Finger dexterity

Stamina

Ability to reach for and handle heavy equipment

Helpful School Subjects

Machine ShopWeldingMechanical DrawingMathAuto MechanicsEnglish

Basic Electricity

Licensing Requirements

None required but voluntary testing for national certification exists.

Union Affiliation

May or may not be affiliated with the International Association of Machinists and Aerospace Workers (Automotive Trades).

Additional Information

Length of apprenticeship programs vary from two to four years, depending on specialty. Must be at least 17 years old. Joint Apprenticeship and Training Committee requires high school diploma or equivalent and aptitude test. Current vehicle operator's license and good driving record necessary. Employment available both in small and large towns. Union shops more prevalent in larger communities. Career advancement opportunities limited. Growing demand for specialists. The Montana Automobile Dealers' Association manages an apprenticeship program in Montana; their address is 501 North Sanders, Helena, Montana 59601.



Occupational Information

Current Employment

About 2,052 are employed in this large occupation in Montana. In addition, others are self-employed. There were 12 active apprentices in Montana in 1995.

Wages

The average entry wage for automobile mechanics in Montana is \$6.74/hour; the average is \$9.86/hour. Helpers earn about \$4.90 to \$6.50 per hour. Experienced mechanics earn commissions ranging from 40 to 45 percent of the labor costs charged to the customer. Auto electricians average about \$8/hour.

Outlook

Employment is projected to grow slower than the statewide average for all occupations in Montana. Complex technology makes it more difficult for people to maintain their own cars. More automobiles have pollution controls, safety devices, and other features that require maintenance. Turnover is fairly high in this occupation. Those who have a broad base of skills, including ability to repair electronic ignitions and automatic transmissions, will fare best.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 3112 CIS for Windows - Automobile Mechanics

AUTO PARTS COUNTER WORKERS

Auto parts counter workers sell spare and replaceable parts and equipment in repair shops or parts stores. They determine the make, year, and type of part needed and inspect damaged parts to determine parts required. Auto parts counter workers advise customers of parts needed according to a description of malfunction. They research information about price and stock number, and order parts for customers, using knowledge of parts specifications.

D.O.T. Code 279.357-062

Working Conditions

Counter workers usually work in clean, comfortable, well-lighted stores. Their hours may vary. Some have to work during weekends or in the evening. Many jobs may be part-time.

Employers

Most work in auto parts stores.

Physical Requirements

Ability to stand for long periods of time Ability to deal with public Good communications skills

Helpful School Subjects

Home Economics Sales

Math Bookkeeping

Union Affiliation

May or may not be affiliated with the International Association of Machinists and Aerospace Workers (Automotive Trades).

Additional Information

Length of this apprenticeship program is two years. High school diploma or equivalent and minimum age of 18 preferred. Sales experience preferred. Previous selling experience may help in finding a job. Work week may include evenings and weekends. Auto parts apprenticeships are available through unions and the Montana Automobile Dealer's Association. For more information on auto parts apprenticeships, contact the Bureau of Apprenticeship and Training, U.S. Dept. of Labor, Drawer 1055, Federal Office Building, 302 South Park, Helena, Montana 59626, or the Montana Automobile Dealers' Association, 501 North Sanders, Helena, Montana 59601.



Occupational Information

Current Employment

About 1,440 are employed in this occupation in Montana. There were six active apprentices in Montana in 1995.

Wages

Vary with type and size of employer. Most receive an hourly wage. Some receive an hourly wage plus a commission on sales. The average entry wage is \$6.98/hour and the average wage is \$8.37/hour.

Outlook

Employment is projected to grow slower than the statewide average for all occupations. The outlook depends on general business conditions, consumer spending, and replacement needs. The use of self-service and computerized checkout systems will somewhat limit the size of the sales force. Job prospects in retail sales are considered good, though, because it is a large occupation with a high turnover rate. Opportunities are best for people with sales experience who are knowledgeable about specific products.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro- CIS - OCC 74542 CIS for Windows - Auto Parts Counter Workers

BAKERS

Bakers make rolls, cakes, breads, cookies, muffins, pies, biscuits, and desserts from recipes. They measure ingredients with spoons and measuring cups and mix ingredients with electric mixers or by hand. Bakers place this shaped dough in greased and floured pans. Bread dough has to rise before being placed in an oven. Some pastry dough is baked immediately. Breads and pastries are placed in and removed from the oven using a peel (a long-handled spade shaped tool). Bakers are skilled in regulating oven temperatures to produce perfect breads and pastries.

D.O.T. Code 526.381-010

Working Conditions

The size and equipment of kitchens depends on the quantity of breads and pastries being prepared and the laws that govern these operations. Most kitchens are conventional in equipment and work space and are air-conditioned because of work near hot ovens. Bakers may work early and late hours, holidays, and weekends. They are required to stand most of the time and to lift heavy bowls and boxes of ingredients. Bakers are prone to falls, burns, and cuts, but these injuries are usually not too serious.

Employers

Retail and wholesale bakeries, hotels and restaurants, and grocery stores. Some are self-employed and manage small shops.

Physical Requirements

Good health Good sense of taste and smell Able to lift and carry heavy weights Free of communicable diseases Clean and neat appearance

Helpful School Subjects

Food Service Math
Chemistry English
Home Economics Bacteriology
Speech Retailing

Union Affiliation

May or may not be affiliated with the Bakers and Confectionery Workers International of America.

Additional Information

Length of this apprenticeship program is three years. High school diploma or equivalent and minimum age of 18 years preferred. Buttrey Food Stores conducts a statewide program operated by local stores.



Occupational Information

Current Employment

About 720 are employed in this medium-sized occupation in Montana. In addition, others are self-employed. There were seven active apprentices in Montana in 1995.

Wages

The average entry wage in Montana is \$5.23/hour. The average is \$7.73/hour. Bakers in Montana state government earn from \$8.05 to \$10.45/hour. Bakers working for wholesale bakeries usually earn more than those working for retail bakeries, and workers who are union members generally earn more than nonunion workers. Helpers start at minimum wage.

Outlook

Employment is projected to increase as fast as the statewide average for all occupations in Montana. The outlook depends on technological advancements and consumer trends. Although the increased use of technology has phased out many wholesale production positions, skilled bakers are in demand, especially in retail bakeries and grocery stores. Many opportunities for pastry and specialty bakers exist in large hotels and restaurants. Employment of bakers is steadier than for most food processing occupations because baking ingredients are available year-round. Economic conditions have little effect on the consumption of baked goods.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 4324 CIS for Windows - Bakers

BRICKLAYERS

Bricklayers use building materials such as brick, structural tile, concrete cinder, glass, gypsum, and terra-cotta block (except stone) to construct walls, partitions, fireplaces, and other structures. Bricklayers primarily use hand tools, including trowels, brick and stone hammers, wooden or rubber mallets, and chisels. In putting up a wall, they must use care in determining the vertical and horizontal alignment of the course. For this reason, bricklayers use a level or plumb line. They cut bricks with a hammer and chisel to fit around windows, doors, and other openings.

D.O.T. Code 861.381-018

Working Conditions

As a rule, bricklayers work outdoors. They stand, kneel, or stoop for long periods of time, sometimes in limited quarters. They may have to lift heavy objects and are subject to injury from tools and falls from scaffolds. Extensive travel to job sites may be necessary to get suitable employment.

Employers

Most work for construction contractors. Many are self-employed.

Physical Requirements

Good health Able to work standing and stooping Able to do heavy lifting for prolonged periods Good sense of balance

Helpful School Subjects

Welding Math

English Mechanical Drawing

Blueprint Reading Sketching

Shop Courses

Licensing Requirements

- 1. Complete a contractor registration form.
- 2. Obtain a bond (not to exceed \$25,000) in an amount equal to average monthly payroll. The minimum amount is \$6,000 for a general contractor, and \$4,000 for a specialty contractor.
- 3. Provide proof of workers' compensation and unemployment insurance or provide proof of an independent contractor exemption with no employees.
- 4. Pay an \$80 registration fee.

Registration Renewal

Registrations expire one year from the date of registration.

Fees

Original/Annual renewal \$80

For Details and Certification Application Materials, Contact

Montana Department of Labor and Industry P.O. Box 8011 Helena, MT 59604-8011 (406) 444-7734

Union Affiliation

May or may not be affiliated with the International Union of Bricklayers and Stonemasons.

Additional Information

Length of this apprenticeship program is three years. Must be at least 17 years old. Joint Apprenticeship and Training Committee requires aptitude test and high school diploma or equivalent. Employment opportunities vary from year to year with the building industry. Most work available in spring and summer.



Occupational Information

Current Employment

About 111 are employed in this small occupation in Montana. In addition, others are self-employed. There were six active apprentices in Montana in 1995.

Wages

Earnings of those who are self-employed depend on the amount of work available, how well they bid a job, and the speed at which they work. Montana union rates for bricklayers are \$16.15/hour, while tile setters and stone masons earn \$17.50/hour. Those who are not members of unions or are not working on construction projects earn less. Union apprentices earn 50 percent of the journey-level wage.

Outlook

Employment is projected to grow faster than the statewide average for all occupations. The outlook depends mainly on construction activity, which changes with loan interest rates, general economic conditions, and the weather. The growing use of brick in construction is increasing the demand for bricklayers. Most job openings will result from the need to replace workers who leave the field.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs Micro-CIS - OCC 4264

CIS for Windows - Bricklayers

BUILDING MAINTENANCE WORKERS

Building maintenance workers are jacks-of-all-trades. Duties include repairing and maintaining plumbing, heating, air conditioning, and electrical systems in buildings. They build partitions, make plaster or drywall repairs, and fix or paint roofs, windows, doors, floors, woodwork, and other parts of building structures. They inspect and diagnose problems and plan how work will be done. They use common hand and power tools, as well as specialized equipment and electronic test devices. Routine preventive maintenance is an important part of repairers' jobs. They keep records of maintenance and repair work.

D.O.T. Code 899.381-010

Working Conditions

Maintenance mechanics often do a variety of tasks in a single day. They work at several different locations in a building, or in several buildings. They may have to stand for long periods, lift heavy objects, and work in uncomfortably hot or cold environments. Some work in awkward and cramped positions or on ladders. They are subject to electrical shock, burns, falls, and cuts and bruises. Evening, night shifts, or weekend work are required, and repairers may be on call for emergency repairs.

Employers

Sawmills and plywood plants, retail trade stores, school districts, real estate firms, government agencies, hospitals and nursing homes, hotels, gas and electric companies.

Physical Requirements

Ability to lift and carry up to 50 pounds Stamina General good health Mechanical ability

Helpful School Subjects

Electrical Theory Plumbing Shop Courses

Union Affiliation

Most elevator mechanics are members of the AFL-CIO.

Additional Information

Length of this apprenticeship program is two years. Related work experience preferred.



Occupational Information

Current Employment

About 3,886 are employed in this very large occupation in Montana. There was one active apprentice in Montana in 1995.

Wages

The average entry wage in Montana is \$6.68/hour. The average wage is \$9.07/hour. Montana county governments pay an average entry wage of \$6.35/hour and an average wage of \$9.90/hour. Union apprentices earn 50 to 70 percent of the journey-level wage.

Outlook

Employment is projected to increase as fast as the statewide average for all occupations in Montana. The outlook depends mainly on the number of buildings that require periodic maintenance. These buildings include hotels, apartments, hospitals, stores, schools, public and private offices, and manufacturing plants. Job turnover ensures a fairly steady demand for building maintenance workers. Employers prefer people with skills in carpentry, welding, and electrical circuitry. Some new buildings have electronic equipment to monitor temperature, humidity, and boiler pressure. Maintenance workers in these buildings need an electronics background.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 3422

CIS for Windows - Building Maintenance Workers

CABINETMAKERS

Cabinetmakers set up and operate a variety of hand and power tools to make and repair wooden cabinets and high grade furniture. Working from plans or blueprints, they plan the sequence of cutting or shaping operations to be performed. They set up and operate woodworking machines such as power saws, joiners, routers, molders, and shapers. Cabinetmakers use dowels, nails, and glue to assemble units. They may have to prepare surfaces for finish and install hardware such as hinges and latches.

D.O.T. Code 660.280-010

Working Conditions

Most cabinetwork is done in shops, then delivered to the job site. The work is not as physically demanding as most construction jobs. Wood dust or fumes may sometimes require wearing protective gear. The use of power tools creates some hazard, but ordinary safety practices usually keep injuries to a minimum.

Employers

Cabinet shops and millwork plants. Many are self-employed.

Physical Requirements

Finger dexterity
Good eye-hand coordination
Stamina, agility
No sinus or other allergic conditions

Helpful School Subjects

Wood Shop Welding
Mechanical Drawing Math
Metal Shop English
Blueprint Reading

Union Affiliation

May or may not be affiliated with the United Brotherhood of Carpenters and Joiners of America.

Additional Information

Length of this apprenticeship program is four years. Joint Apprenticeship and Training Committee requires minimum age of 17 years, aptitude test, and high school diploma. Ability to lift weights from 20-100 pounds. Ability to tolerate noise, wood dust, and machine vibrations. Most provide own hand tools.



Occupational Information

Current Employment

About 360 are employed in this small occupation in Montana. In addition, others are self-employed. There were two active apprentices in Montana in 1995.

Wages

The average entry wage in Montana is \$6.29/hour. The average wage is \$8.96/hour. Workers who are union members generally earn more than nonunion workers.

Outlook

Employment is projected to grow as fast as the statewide average for all occupations in Montana. The outlook depends on the demand for cabinets and other housing fixtures, the increase in prefabricated work, and the amount of new construction. Remodeling provides some work. Technological changes could limit growth. For example, concealed hinges and other fasteners that can be installed at least partially by automated equipment are growing in use. These fasteners help cabinet manufacturers to increase productivity without hiring more workers.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 4586 CIS for Windows - Cabinetmakers

CARPENTERS

Carpenters use a variety of power and hand tools to construct many wooden projects. Carpenters are usually classified as rough or finish. Rough carpenters are less skilled. Their duties are more basic, such as building forms, erecting scaffolding, framing houses, or general assembling of bridges and trestles. Finish carpenters may work from blueprints and their work is more exact. Jobs such as installing trim, doing cabinetwork, hanging doors, or installing hardwood floors usually qualify one as a finish carpenter. Carpenters have a knowledge of strength and usefulness of materials.

D.O.T. Code 860.381-022

Working Conditions

Prolonged standing, squatting, or climbing may be strenuous. There is a risk of injury from slips, falls, the use of power tools, and contact with sharp objects. Weather conditions may sometimes be extreme. Travel away from home may be a necessary factor in getting employment.

Employers

Building contractors, large manufacturing firms, utility companies, government agencies. Many carpenters are self-employed.

Physical Requirements

Good health
Finger dexterity
Stamina, good balance
Normal vision, good eye-hand coordination
No sinus or other allergy problems
Ability to work in high places

Able to lift weights

Helpful School Subjects

Wood Shop Math
Metal Shop English
Mechanical Drawing Welding

Blueprint Reading

Licensing Requirements

- 1. Complete a contractor registration form.
- 2. Obtain a bond (not to exceed \$25,000) in an amount equal to average monthly payroll. The minimum amount is \$6,000 for a general contractor, and \$4,000 for a specialty contractor.
- 3. Provide proof of workers' compensation and unemployment insurance or provide proof of an independent contractor exemption with no employees.
- 4. Pay an \$80 registration fee.

Registration Renewal

Registrations expire one year from the date of registration.

Fees

Original/Annual renewal \$80

For Details and Certification Application Materials, Contact

Montana Department of Labor and Industry P.O. Box 8011 Helena, MT 59604-8011 (406) 444-7734

Union Affiliation

May or may not be affiliated with the United Brotherhood of Carpenters and Joiners of America.

Additional Information

Length of this apprenticeship program is four years. High school diploma or equivalent and postsecondary technical training preferred. Joint Apprenticeship and Training Committee requires minimum age of 17 years and aptitude test. Most provide own hand tools. Specialization more common in large metropolitan areas. May also install insulation. Extra credit is given in considering applicants for apprenticeship for courses in math, science, shop, and blueprint reading.



Occupational Information

Current Employment

About 3,026 are employed in this large occupation in Montana. In addition, many others are self-employed. Peak employment for carpenters occurs in the summer. There were 77 active apprentices in Montana in 1995.

Wages

The average entry wage for carpenters in Montana is \$7.78/hour. The average wage is \$10.62/hour. Union wages range from \$9.90 to \$13.50/hour, depending on the district, plus travel allowance. Union siders earn about \$13.50/hour. Carpenters in Montana state government earn about \$11.50/per hour. Work for maintenance carpenters tends to be steadier than for construction and self-employed carpenters.

Outlook

Employment is projected to grow much faster than the statewide average for all occupations. The outlook depends on the amount of commercial and residential construction. Construction is affected by economic conditions and the weather. Since many people work in this occupation, replacement needs are high. Carpenters with all-around skills have better prospects than those who do only relatively simple, routine types of carpentry.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 4254 CIS for Windows - Carpenters

CHEFS AND DINNER COOKS

Chefs and dinner cooks are primarily responsible for the reputation a restaurant has. Their duties depend on the type and size of a restaurant. In a small restaurant, one chef or cook prepares all the food. Larger restaurants employ many chefs. Each chef is usually responsible for a specific areafor example, a fry cook. Head cooks coordinate and supervise the kitchen staff, plan menus, and purchase supplies.

D.O.T. Codes: 313.131-014, 313.361-014

Working Conditions

The size and equipment of kitchens depend on the size of the restaurant, the quantity of food prepared, and the laws that govern those operations. Most kitchens are conventional in equipment and work space and are air-conditioned because of work near hot stoves and ovens. Chefs and cooks may work late hours, holidays, and weekends. They must stand most of the time and lift heavy kettles and pots. Cooks employed in private and public schools usually only work nine to 10 months or during the school year. Chefs and cooks are prone to falls, burns, and cuts, but these injuries are not usually too serious.

Employers

Restaurants, school cafeterias, hotels, nursing and personal care facilities, hospitals, industrial cafeterias.

Physical Requirements

Good general health Cleanliness Keen sense of taste and smell Physical stamina Free from communicable disease

Helpful School Subjects

Business Math Biology Business Administration English

Home Economics Commercial Food Preparation

Union Affiliation

May or may not be affiliated with the Hotel and Restaurant Employees and Bartenders International Union.

Additional Information

Length of this apprenticeship program is three years. High school diploma or equivalent and minimum age of 18 years preferred. Must be able to work fast and under pressure. Often work irregular hours.



Occupational Information

Current Employment

About 5,452 are employed in this very large occupation in Montana. There were two active apprentices in Montana in 1995.

Wages

Vary with location and type and size of establishment. In Montana, the average entry wage for cooks is about \$5.12/hour and for chefs is about \$7.34/hour. The average wage is about \$6.06/hour for cooks and \$7.58/hour for chefs. In Montana state government, cooks earn \$6.15 to \$8.80/hour. Institutional cooks earn somewhat more than restaurant cooks. Chefs may also receive a share of the restaurant's profits. The average entry wage for short-order cooks is \$5.04/hour and the average wage is \$5.93/hour.

Outlook

Employment for restaurant and short-order cooks is projected to grow much faster than the statewide average for all occupations in Montana. Employment for institutional or cafeteria cooks is projected to increase as fast as the statewide average. The increased demand is expected to result from population growth, higher incomes, changing family lifestyles, and more leisure time. Job turnover is moderately high for cooks and fairly low for chefs. Opportunities are expected to be good for cooks working in hospitals, nursing homes, and other health care facilities that serve a growing number of elderly people.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 7824 CIS for Windows - Chefs and Dinner Cooks

DRAFTERS

Drafters compose detailed drawings for engineers, architects, designers, and scientists. These drawings show exact specifications and dimensions of all views of an object. Drafters may also figure quality, cost, strength, and quantity of materials to be used. They decide procedures and instructions to be followed. Classification of drafters is according to their work and level of responsibility.

Detailers draft detailed drawings of parts of machines or structures from rough or general design drawings.

Structural drafters and architectural drafters prepare layouts from architects' and engineers' preliminary plans.

Mechanical drafters prepare layouts of machinery and mechanical devices.

D.O.T. Codes: 001.261-010, 005.281-014, 007.281-010, 017.261-018

Working Conditions

Most drafters work in well-ventilated and well-lighted rooms. The work is very detailed and they must sit for long periods of time. For these reasons, some drafters may suffer from backaches and eye strain.

Employers

Engineering and architectural firms; firms that manufacture machinery, electrical and electronic equipment, and fabricated metals; construction, transportation, and communications companies, and public utilities.

Physical Requirements

Finger dexterity Good eyesight

Helpful School Subjects

Mechanical Drawing Art
Physical Sciences Math
English Graphics
Blueprint Reading Drafting

Additional Information

Length of apprenticeship programs is four years. High school diploma or equivalent and minimum age of 18 years preferred. Need ability to visualize and draw three dimensional objects. Many employers require post-secondary technical education. Employment varies with building industry.



Occupational Information

Current Employment

About 483 are employed as drafters in this medium-sized occupation in Montana. There was one active detailer apprentice in Montana in 1994. There were no active apprentices in Montana in 1995.

Wages

The average entry wage in Montana varies from about \$1,320 to about \$1,510/month; the average wage varies from about \$1,655 to about \$2,725/month. Drafters, design technicians, and photogrammetric technicians working in Montana state government earn an average entry wage of \$1,475/month and an average maximum wage of \$2,035/month.

Outlook

Employment for drafters is expected to grow as fast as the statewide average for all occupations in Montana. The outlook depends on long-term industrial growth. Productivity gains from the use of computer aided design (CAD) systems were expected to slow employment growth. However, CAD systems have resulted in more complex designs and more information, which has increased demand for drafters. Those with an associate degree in drafting who are trained in the use of CAD systems have the best prospects for employment.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 2484 CIS for Windows - Drafters

ELECTRICIANS

Electricians plan layouts, install and repair wiring, electrical fixtures, apparatus, and control equipment. Many installations require a knowledge of blueprint reading. Various testing equipment is used to determine circuits and proper installation. Electricians may be required to furnish preliminary sketches along with cost estimates of materials for some jobs. They must have knowledge of proper material to use for different projects and electrical code requirements.

D.O.T. Codes: 824.261-010, 829.261-018, 820.261-014, 820.261-018, 824.261-014,

869.381-026, 823.281-014, 729.281-014

Working Conditions

Electricians usually work inside and are not exposed to the weather. It may be necessary to work in cramped quarters. There is some danger from electrical shock, but safety precautions reduce that danger to a minimum. Working from heights is necessary at times.

Employers

Electrical and other construction contractors; manufacturing companies; transportation, utility, and communication companies. Some are self-employed.

Physical Requirements

Able to work in high places Good health Agility Manual dexterity Good color discretion

Helpful School Subjects

Blueprint Reading Electronics
Shop Courses Math
Mechanical Drawing
Electrical Theory Physics

Licensing Requirements

For residential electricians:

- 1. Two years of apprenticeship (4,000 hours) in the electrical trade, or two years (4,000 hours) of practical experience in residential structures consisting of fewer than five living units per structure.
- 2. Satisfactory completion of a written exam.

For journeyworker electricians:

- 1. Four years of apprenticeship (8,000 hours) in the electrical trade, or four years (8,000 hours) of practical electrical experience in new construction.
- 2. Satisfactory completion of a written exam.

For master electricians:

Graduation from an electrical engineering program at an accredited college plus one year of practical electrical experience, or graduation from an electrical trade school plus four years of practical experience in electrical work, or five years planning, laying out or supervising the installation and repair of wiring apparatus or equipment for electric light, heat, and power.

License Renewal

Licenses expire on July 15 of each year, and may be renewed upon payment of a fee. All levels of electricians are required to complete 24 hours of continuing education every three years as a condition of renewal.

Fees

Application	\$10
Exam	50
Original license	
Residential	\$30
Journeyworker	30
Master	75
Annual renewal	
Residential	\$22.50
Journeyworker	22.50
Master	75

For Details and Licensing Application Materials, Contact

Montana State Electrical Board 111 N. Jackson, Lower Level PO Box 200513 Helena, MT 59620-0513 (406) 444-4390

Union Affiliation

May or may not be affiliated with the International Brotherhood of Electrical Workers.

Additional Information

Length of this apprenticeship program is four years. High school diploma and postsecondary technical training and minimum age of 18 years preferred. Joint Apprenticeship and Training Committee requires aptitude test and one year of algebra. Worker provides own hand tools. May work irregular hours.



Occupational Information

Current Employment

About 1,146 are employed in this medium-sized occupation in Montana. In addition, others are self-employed. There were 193 active apprentices in 1995 in Montana.

Wages

The average entry wage for electricians in Montana is \$11.50/hour; the average wage is \$14.04. The average wage rate for electricians working on public construction projects is \$17.17/hour. In Montana state government, electricians earn about \$12/hour. The average entry wage for maintenance electricians is \$11.50/hour and the average is \$16.32/hour.

Outlook

Employment for electricians is projected to grow as fast as the statewide average for all occupations in Montana. The outlook depends mainly on construction and manufacturing activities, which are sensitive to general economic conditions and loan interest rates. Maintenance electricians with training in electronic controls have a better chance of finding work. Entrance into apprenticeship programs may be very competitive. Employment opportunities vary with building industry.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 5626 CIS for Windows - Electricians

ELECTRIC MOTOR REPAIRERS

Electric motor repairers adjust and repair electric motors, generators, and equipment. Equipment includes starting devices and switches. Repairers follow schematic drawings. They use hand tools, coil-winding machines, power tools, and test equipment.

D.O.T. Code 721.281-018

Working Conditions

Electric motor repairers usually work in repair shops that are well-lighted and ventilated, but are sometimes noisy when motors are tested.

Physical Requirements

Mechanical aptitude Manual dexterity Good physical condition

Helpful School Subjects

Small Engine Repair Science
Auto Mechanics Math
Machine Shop Electronics

Union Affiliation

May or may not be affiliated with the International Brotherhood of Electrical Workers.

Additional Information

Length of this apprenticeship program is four years. High school diploma or equivalent and minimum age of 18 years preferred. Most provide own hand tools.



Occupational Information

Current Employment

About 34 are employed in this very small occupation in Montana. In addition, others are self-employed. There was one active electric motor repairer apprentice in 1995.

Wages

Wages vary due to type of industry, education, and experience.

Outlook

Employment is projected to grow as fast as the statewide average for all occupations in Montana.

ELECTRONICS MECHANICS

Electronics mechanics install and repair electronic equipment such as computers, industrial controls, radar systems, telemetering and missile control systems, transmitters, and antennas. They install electric components in new equipment. Preventive maintenance is a major responsibility of electronics mechanics. Mechanics check, clean, and repair equipment periodically to detect and prevent major malfunctions. They use several kinds of testing devices and may run special diagnostic programs that help pinpoint certain malfunctions.

Security alarm installers (also referred to as protective signal installers) install any assembly of equipment and devices or a single device such as a solid state unit which plugs directly into a 110-volt AC line, designed to detect or signal or to both detect and signal unauthorized intrusion, movement, or criminal acts at a protected premises.

D.O.T. Codes: 828.281-010, 828.261-014, 828.261-022, 822.361-018

Working Conditions

Working conditions vary depending upon the job. In some locations, mechanics are exposed to heat, grease, and noise. They may have to work in cramped spaces. Sometimes work is done in the electronic repair shop where surroundings are usually quiet, clean, and well lighted. Employment in many settings may entail considerable walking, kneeling, bending, and reaching to install or repair equipment. Electronics mechanics usually work with little supervision.

Employers

Manufacturers of measuring devices, computing machines, and electronic components; telephone companies and public utilities.

Physical Requirements

Excellent eyesight
Color discretion
Normal hearing
Manual dexterity
Good eye-hand coordination

Helpful School Subjects

Blueprint Reading Electronics
Computer Programming Math
Electrical Theory Chemistry
Blueprint Reading Machine Shop

Licensing Requirements

Federal Communications Commission (FCC) licensing may be required by some employers.

Union Affiliation

May or may not be affiliated with the International Brotherhood of Electrical Workers.

Additional Information

Length of this apprenticeship program is four years. One or two years of post high school training in electronics or electrical engineering preferred. May require aptitude test. Hobbies involving electronics (ham or CB radios, building stereo equipment) provide experience. In some cases, applicants must obtain security clearance. Frequent retraining required.



Occupational Information

Current Employment

About 93 are employed in this small occupation in Montana. There are 79 licensed security alarm installers in Montana. There were two active electronics mechanic apprentices and one active protective signal installer apprentice in Montana in 1995.

Wages

The average entry wage in Montana is \$11.25/hour; the average wage is about \$14.04/hour. In Montana state government, the average wage is \$10.55/hour.

Outlook

Electronics mechanics include data processing equipment repairers and commercial and industrial electronics repairers. The outlook for data processing equipment repairers is projected to increase faster than the statewide average for all occupations in Montana. The outlook depends on the demand for computers and communications equipment. The outlook for commercial and industrial electronics repairers is projected to decline. Technology in the electronics industry is changing rapidly. A good understanding of math, science, digital and analog electronics will help workers adapt to the changes. Knowledge of programming is needed in some situations to work with software-driven equipment.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 3165

CIS for Windows - Computer Maintenance Technicians

ELECTRONICS TECHNICIANS

Electronics technicians develop, manufacture, and service equipment and systems such as radios, radar, sonar, television, industrial and medical measuring or control devices, navigational equipment, and computers. They often use measuring and diagnostic devices to test, adjust, and repair equipment.

Avionics technicians service radios, radar and other aircraft instruments.

Electrical technicians apply electrical theory, test and modify electrical machinery, electrical control equipment and circuitry in industrial or commercial plants and laboratories. They diagnose the cause of electrical or mechanical malfunction or failure or equipment and perform preventative and corrective maintenance. They plan, direct and record periodic electrical testing, and recommend or initiates modification or replacement of equipment which fails to meet acceptable operating standards.

D.O.T. Codes: 003.161-014, 003.161-010, 823.261-026

Working Conditions

Most electronics technicians work regular hours in laboratories, offices, electronics shops, or industrial plants. Service representatives usually spend much of their time working in customers' establishments. Some are exposed to electrical shock hazards from equipment.

Physical Requirements

Good eye-hand coordination Ability to notice and compare differences in objects Color discretion

Helpful School Subjects

Machine ShopPhysicsBlueprint ReadingDraftingElectronicsEnglishComputer ProgrammingMath

Chemistry

Licensing Requirements

Federal Communications Commission (FCC) licensing may be required by some employers.

Additional Information

Length of this apprenticeship program is three years. Previous work experience and/or post high school electronics technology training preferred. Frequent retraining may be necessary. Security clearance necessary in some cases. Valid driver's license may be required. Travel may be necessary.



Occupational Information

Current Employment

About 432 are employed in this occupation in Montana. In addition, others are self-employed. There was one active apprentice in 1995.

Wages

Wages vary depending on type of equipment, education and experience. In Montana state government, the average wage is \$10.55/hour.

Outlook

Employment is projected to grow slower than the statewide average for all occupations in Montana. The employment outlook varies with the area of specialization and industry. Automation is eliminating much of the routine work of electronics testing technicians.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 5668 CIS for Windows - Electronics Technicians

FARM EQUIPMENT MECHANICS

Farm equipment mechanics most often work for dealers of farming implements as service technicians. Some may assemble new implements and machinery. Sometimes body work is done, repairing dented or torn sheet metal on tractors or other machinery. Mechanics spend much of their time repairing and adjusting malfunctioning equipment that is brought to the shop. During planting and harvesting, they may travel to farms to make emergency repairs on equipment so critical farming operations are not delayed. They also perform preventive maintenance. They use basic hand tools, testing equipment, welding equipment, and power tools to repair broken machinery.

D.O.T. Codes: 624.281-010, 624.381-018

Working Conditions

Farm equipment mechanics usually work indoors. Modern farm equipment repair shops are well ventilated, lighted, and heated. During planting and harvesting seasons, mechanics may make emergency repairs in the field, perhaps traveling many miles to do so. Farm equipment mechanics come in contact with grease, gasoline, rust, and dirt. There is danger of injury when they repair heavy parts supported on jacks or by joists. Mechanics must take care to avoid burns from hot engine parts, cuts from sharp edges of machinery, and injury from farm chemicals.

Employers

Large farms, farm equipment dealers, independent repair shops. Some are self-employed.

Physical Requirements

Mechanical aptitude Manual dexterity Ability to lift and move heavy weights

Helpful School Subjects

Blueprint Reading Welding Gas/Diesel Mechanics Math

Auto Mechanics Machine Shop

Union Affiliation

May or may not be affiliated with the International Association of Machinists and Aerospace Workers.

Additional Information

Length of this apprenticeship program is four years. High school diploma or equivalent and minimum age of 18 years preferred. May require aptitude test. Technical training in electronics becoming important. Farm background an advantage when seeking employment. Previous experience and training in diesel and gas engines, maintenance and repair of hydraulics, and welding stressed by employers. Postsecondary technical training graduates preferred over high school experience. May travel to farms to make emergency repairs.



Occupational Information

Current Employment

About 288 are employed in this small occupation in Montana. In addition, others are self-employed. There were five active apprentices in Montana in 1995.

Wages

The average wage in Montana is about \$8.99/hour. Wages vary depending on type of equipment, season, education, and experience.

Outlook

Employment is projected to grow slower than the statewide average for all occupations in Montana. Farm equipment mechanics with skill in several different phases of equipment repair have a competitive advantage, as do those with training in diesel mechanics or farm equipment. As farm equipment becomes technically more complex, it is more difficult for farmers to do their own repairs. The consolidation of farms has reduced employment for repairers because of increased efficiency. However, increased sales of smaller farm equipment for lawn and garden work has increased work for farm equipment mechanics. During recessions, farmers prefer to repair existing equipment than buy new equipment. Employment outlook is better in the summer.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 3115

CIS for Windows - Farm Equipment Mechanics

FIREFIGHTERS

Firefighters are prepared to respond to a fire and handle any emergency that arises. They may connect hose lines to hydrants, operate a pump, or position ladders. They may rescue victims and deliver emergency medical aid. Duties include ventilating smoke-filled areas, operating equipment, and salvaging the contents of buildings. Firefighters prepare written reports on fire incidents. Some firefighters operate fire apparatus, ambulances, emergency rescue vehicles, and fireboats. Others educate the public about fire prevention and safety measures.

D.O.T. Code 373.364-010

Working Conditions

Firefighters spend much of their time at fire stations, which usually have facilities for dining and sleeping. When an alarm comes in, firefighters must respond rapidly, regardless of the weather or hour. They may spend long periods of time at fires, hazardous chemical incidents, and other emergencies on their feet and outdoors, sometimes in adverse weather. Firefighting is a hazardous occupation. It involves risk of death or injury from sudden caveins of floors or toppling walls and from exposure to flames and smoke. Firefighters may come in contact with poisonous, flammable, and explosive gases and chemicals. Work hours of firefighters vary widely.

Employers

Municipal fire departments. Forest firefighters work for federal and state governments.

Physical Requirements

Excellent physical condition Mechanical aptitude Stamina Agility

Helpful School Subjects

Physical Education First Aid Shop Courses Sciences Cardio-Pulmonary Resuscitation (CPR)

Union Affiliation

May or may not be affiliated with the International Association of Firefighters (AFL-CIO).

Additional Information

Length of this apprenticeship program is three years. Must be 18 years of age, but younger than 34 years of age. High school diploma or equivalent preferred. Aptitude tests required, both written and physical tests of strength, stamina and agility. They are usually on duty 24 hours, then off duty 48 hours. Taking Emergency Medical Technician (EMT) training may be helpful in getting a job. Experience in building trades or truck driving is also helpful.



Occupational Information

Current Employment

About 298 are employed in this occupation in Montana. There are many more who are volunteers. There were seven active apprentices in Montana in 1995.

Wages

Vary with region, city size, level of responsibility, and rank. Fringe benefits include health insurance, vacation, sick leave, retirement, uniforms, and overtime pay. The average entry wage in Montana city governments is about \$1,415/month; the average wage is about \$2,180/month. Forest firefighters work on call, with wages that vary by the assignment. They may work a great deal of overtime.

Outlook

Employment of firefighters is projected to show little growth. The outlook depends on public budgets and replacement needs. Small towns increasingly hire one or two professional firefighters to lead volunteers, conduct departmental business, and maintain equipment. When openings occur, prospects are best for applicants who are able to pass performance tests and who have some educational background in fire protection. Competition is keen. Because many fire departments provide ambulance and other emergency services, applicants who are certified as emergency medical technicians are more competitive for openings.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 9426 CIS for Windows - Firefighters

GLAZIERS

Glaziers install glass in windows, skylights, building fronts, interior walls, and display cases. On some jobs, the glass is precut and ready to install. For other jobs, glaziers may have to cut the glass before installing. They cut glass with a special cutting tool, resting it on the edge of a rack, or A-frame, or flat against a cutting table. Glaziers secure glass in openings with materials such as rubber gaskets, putty, metal clips, and metal or wood molding. They use a variety of hand tools in addition to glass cutters. Glaziers also use many types of sealants, mastics--a paste-like cement--and rubber moldings.

D.O.T. Code 865.381-010

Working Conditions

Much of the glass installed is large and bulky, requiring glaziers to work in teams. The work may require considerable travel to outlying areas, as shops equipped to handle large installations are concentrated in highly populated areas. The work requires a considerable amount of bending, stooping, standing, and lifting. There is a chance of injury from lifting glass, falling from scaffolding, or cuts from broken glass.

Employers

Glazing contractors; manufacturers of windows, doors, and mirrors; glass stores. Some are self-employed.

Physical Requirements

Good physical condition Stamina, agility Good balance Good eye-hand coordination

Helpful School Subjects

Blueprint Reading Math Mechanical Drawing Shop General Construction

Additional Information

Length of this apprenticeship program is three years. High school diploma and postsecondary technical training and minimum age of 18 years preferred. Often requires a valid driver's license. Glass is now popular in building design. Most workers provide own hand tools.



Occupational Information

Current Employment

About 159 are employed in this small occupation in Montana. In addition, others are self-employed. There was one active apprentice in Montana in 1995.

Wages

The average entry wage for glaziers in Montana is \$6.41/hour. The average wage is \$9.14/hour. The basic hourly rate for union journeyworkers in construction is \$12.30/hour plus travel allowances. Workers who are union members are generally paid more than nonunion workers. Apprentices earn 50 to 60 percent of the journey-level union rate.

Outlook

Employment is projected to grow much faster than the statewide average for all occupations in Montana. The outlook for construction glaziers depends on building activity and changes in building materials and methods. Since glass is expected to continue to be popular in building design, growth in the demand for glaziers to install and replace glass window units is anticipated. The use of glass in solar panels for buildings may further increase demand. Work for glaziers is less seasonal than in most construction jobs. Replacing broken glass, cutting glass for store cabinets, and similar jobs provide work throughout the year.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 4248 CIS for Windows - Glaziers

GRINDER OPERATORS

Grinder operators set up and operate grinding and related tools that remove excess material from internal and external surfaces of workpieces. They use machines that sharpen edges or corners, or buff, hone, and polish metal or plastic workpieces. Grinder operators plan, set up, and perform the correct sequence of machining operations according to blueprints, layouts, or other instructions. Using micrometers, gauges, and other precision measuring instruments, they compare the work with tolerance limits given in specifications.

D.O.T. Code 603.280-018

Working Conditions

Grinders must endure dirt, dust, grease, and flying metal or plastic chips. They have a well-lighted environment and work is not physically demanding. Noise is one factor when working with machinery, and safety is of utmost importance. Grinding operators have to stand for long periods of time.

Physical Requirements

Good hand and wrist movement and usage Good vision

Helpful School Subjects

Blueprint Reading Math Machine Shop

Additional Information

Length of this apprenticeship program is four years. High school diploma or equivalent and minimum age of 18 years required. Aptitude test required. Need ability to visualize two-and three-dimension objects and to make visual comparisons. Risk injury from cutting tools, moving machinery, and abrasive dust.



Occupational Information

Current Employment

About 116 are employed as tool grinders, filers and sharpeners in Montana. There was one active apprentice in 1994 in Montana. There were no active apprentices in Montana in 1995.

Outlook

Employment is projected to show little to no growth.

HEATING AND COOLING SYSTEM MECHANICS

Heating and cooling system mechanics install and repair refrigeration and heating equipment used in homes, schools, and commercial buildings. They work on equipment ranging from private home heating units to large, complex systems in plants and factories. They diagnose problems, set up motors and pumps, install air ducts and fuel pumps, and connect equipment to power sources.

Refrigeration mechanics install and service a variety of industrial and commercial refrigeration equipment. Mechanics follow blueprints, design specifications, and manufacturers' installation instructions to install and repair motors, compressors, condensing units, evaporators, and other parts. They connect this equipment to refrigerant lines and electrical power sources, then check for proper operation. Mechanics use a variety of hand and power tools including pipe cutters and benders and torches. They use testing devices to check electrical circuits and refrigerant pressures.

D.O.T. Codes: 637.261-014, 637.261-026, 637.381-014

Working Conditions

Indoors and outdoors. Heating and cooling system mechanics generally work a five-day, 40-hour week, with evening and weekend work during emergencies. Overtime work is common during busy seasons (summer and winter). Mechanics may spend all of the work day away from the shop. They may be exposed to noise, fumes, and hazards of electrical shock and muscle strain.

Employers

Plumbing, heating, air conditioning, and electrical contractors; plumbing and heating equipment wholesalers; fuel dealers; utility companies; electrical repair shops; grocery stores; warehouses. Many are self-employed.

Physical Requirements

Able to visualize objects from pictures, drawings, and descriptions Eye-hand coordination Mechanical ability Able to see slight differences in objects

Helpful School Subjects

Blueprint Reading Math
Shop Physics
Welding Electricity

Union Affiliation

Many are members of either the United Association of Plumbers and Pipefitters or the Sheet Metal Workers' International Association.

Additional Information

Length of the heating and cooling system mechanic apprenticeship program is three years. Length of the refrigeration mechanic apprenticeship program is four years. High school diploma or GED and minimum age of 18 years required. Formal training programs are available at some postsecondary schools. Because of increased competition for jobs, formal training is becoming more important. Evening and weekend work necessary in emergencies.



Occupational Information

Current Employment

About 465 are employed in this medium-sized occupation in Montana. In addition, others are self-employed. There was one active environmental control system installer apprentice and three active refrigeration mechanic apprentices in Montana in 1995.

Wages

The average wage for heating and cooling mechanics in Montana is about \$17.85/hour. Refrigeration mechanics earn about \$12.08/hour. Mechanics who work on heating and cooling systems earn more than those who work on only one system. Union apprentices earn 50 percent of the journey-level wage.

Outlook

Employment is projected to grow faster than the statewide average for all occupations in Montana. The outlook depends on construction activity and on interest in energy conservation. Repair and service work depends less on new construction than does installation work. Employment prospects are best for refrigeration mechanics and for mechanics who are able to work on both heating and cooling systems.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 3146

CIS for Windows - Heating and Cooling System Mechanics

HEAVY EQUIPMENT OPERATORS

Heavy equipment operators (also called operating engineers) use machinery to move construction materials and other manufactured goods, earth, logs, petroleum products, grain, coal, and other heavy materials. Generally, they move materials over short distances. Operators control equipment by moving levers or pedals, operating switches, or turning dials. They may also set up, inspect, and adjust equipment and make minor repairs. Material moving equipment operators are classified by the type of machines they operate.

D.O.T. Code 859.683-010

Working Conditions

Many operating engineers work outdoors, in hot and cold weather, but do not usually work in rain or snow. Some machines are noisy and constantly shake or jolt the operator. They must constantly observe safety practices.

Employers

Construction contractors, state and local public works, highway departments, utility companies, logging and sawmill industries, mining companies.

Physical Requirements

Stamina

Above average eye-hand-foot coordination

Good health

Helpful School Subjects

Auto Mechanics Math Metal Shop Drafting Physics English

Electrical Shop

Licensing Requirements

- 1. Minimum age of 18 years.
- 2. A physical exam (not required for third class licenses).

3. Experience with equipment in the class for which licensure is sought:

<u>License</u> <u>Experience Required</u> <u>Type of Equipment</u>

Third class -- For oilers who move truck cranes

Second class 2 years Cranes of 6-15 tons or boom length

of 25-60 feet; hoists not in excess of

100 brake horsepower

First class 3 years All types

4. Satisfactory completion of a written exam.

License Renewal

Licenses expire one year from the date of issue. First and second class hoist and crane operators are required to have a physical exam and pay a fee to renew their licenses.

Fees

Original license	
Third class	\$40
Second class	50
First class	60
Annual renewal	16

For Details and Licensing Application Materials, Contact

Montana Department of Commerce Professional and Occupational Licensing Bureau 111 N. Jackson, Lower Level PO Box 200513 Helena, MT 59620-0513 (406) 444-1653

Union Affiliation

May or may not be affiliated with the International Brotherhood of Operating Engineers.

Additional Information

Length of this apprenticeship program is three years. High school diploma or equivalent required and minimum age of 18 years preferred. Able to work in considerable dust, dirt, and noise. Dangerous work. Experience in operating tractors and other farm machinery helpful. May be required to travel. Often laid off during winter. For more information, write the American Society of Mechanical Engineers, United Engineering Center, 22 Law Drive, Fairfield, NJ 07007.



Occupational Information

Current Employment

About 1,242 are employed in this large occupation in Montana. Employment increases in the summer months when logging, mining, and construction activities are greatest. There were 14 active apprentices in Montana in 1995.

Wages

Vary with weather, type of equipment, size of metropolitan area, and construction activity. The average entry wage in Montana for heavy equipment operators is about \$10.38/hour; the average wage is about \$14.34/hour. Operators in Montana state government earn \$8.30 to

\$11.60/hour, depending on the complexity of the task. Montana cities pay average wages of \$7.40 to \$10.15/hour. Montana counties pay average wages of \$6.55 to \$8.85/hour. Log loaders and logging tractor operators earn by the load, log, day, thousand board feet, or ton. The union rates range from \$10.65 to \$15/hour.

Outlook

Employment is projected to grow slower than the statewide average for all occupations in Montana. The outlook depends on the level of construction activity, economic conditions, and availability of funding for large construction projects and road maintenance. Job openings will occur as workers leave the occupation. More jobs are available in spring and summer months since construction activity increases during warmer weather. Because construction activity is highly sensitive to economic conditions, the number of openings varies from year to year.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 6151 CIS for Windows - Heavy Equipment Operators

HYDROELECTRIC STATION OPERATORS

Hydroelectric station operators control electrical generating units and related equipment at a hydroelectric-generating station. They operate a switchboard and manually-operated controls to control water wheels, generators, and auxiliary hydroelectric-generating station equipment. They distribute power output among generating units, according to power demands. They may perform minor maintenance on equipment.

D.O.T. Code 952.362-018

Working Conditions

Powerplants are well lighted and ventilated, clean, and orderly, but there is some noise from equipment. Workers usually sit or stand at a control station. The work is usually not physically strenuous, but requires constant attention. Powerplants provide electricity around the clock, so operators often work nights and weekends, usually on rotating shifts.

Physical Requirements

Mechanical ability
Manual dexterity
Good physical condition
Good vision
Good hearing

Helpful School Subjects

Machine Shop Physics
Mechanical Drawing Chemistry
Electrical Shop

Union Affiliation

May or may not be affiliated with the International Brotherhood of Electrical Workers or the Utility Workers Union of America.

Additional Information

Length of this apprenticeship program is three years. High school diploma or equivalent preferred and minimum age of 18 years required. Shift work common.



Occupational Information

Current Employment

About 216 are employed as power generating plant operators in Montana. This is a small occupation in Montana. There were 10 active apprentices in Montana in 1995.

Outlook

Employment is projected to grow slower than the statewide average for all occupations in Montana. The increasing use of automatic controls and more efficient equipment should further offset the need for new plant construction. Most job openings will occur as workers transfer to other occupations or leave the labor force.

IRONWORKERS

Ironworkers construct and erect structural metal products such as the framework for buildings, bridges, and other structures. They use blueprints and follow job orders. Ironworkers may also align and assemble ornamental iron. They use metalworking and welding equipment and hand tools. They may bolt, weld, rivet, or solder pieces to make a finished product. They assemble and use hoisting equipment to move materials around the construction site.

D.O.T. Code 801.361-014

Working Conditions

Ironworkers usually work outside in all kinds of weather. Those who work at great heights do not work when it is wet, slippery due to ice or snow, or extremely windy. Falls from heights are one hazard. However, they use safety devices such as safety belts, scaffolding, and nets to reduce the risk of injuries. They may have to travel long distances to work sites.

Employers

Construction contractors; steel and iron companies; shops that fabricate metal products; firms that manufacture farm and garden machinery; government agencies; public utilities; large firms that do their own construction. Very few are self-employed.

Physical Requirements

Above average strength and endurance Good eyesight without glasses Able to work in high places and lift heavy weights Good balance Manual dexterity

Helpful School Subjects

English Math
Mechanical Drawing Welding
Blueprint Reading Forge Shop
Physical Education Metal Shop

Union Affiliation

May or may not be affiliated with the International Association of Bridge, Structural and Ornamental Iron Workers.

Additional Information

Length of this apprenticeship program is three years. High school diploma and postsecondary technical training and minimum age of 18 years preferred. Can involve considerable travel. Employment opportunities vary with building industry. Seasonal employment.



Occupational Information

Current Employment

This is a small occupation in Montana. There were 21 active apprentices in Montana in 1995.

Wages

Structural steelworkers in Montana earn about \$10.48/hour. Construction ironworkers covered by union contracts earn about \$16/hour plus travel allowance. This includes reinforcing steel placing workers and structural steel workers. Union apprentices earn 40 to 60 percent of the journey-level union wage.

Outlook

Employment for ironworkers is projected to grow much faster than the statewide average for all occupations in Montana. Employment for metal fabricators is projected to decline. The outlook depends primarily on the amount of construction activity and replacement needs. Increased use of structural steel and concrete reinforced with iron in buildings is expected to create some new jobs. However, most job openings will result from the need to replace those workers who leave the occupation. The number of job openings varies from year to year because construction activity is sensitive to economic conditions.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 5482 CIS for Windows - Ironworkers

JEWELERS

Jewelers use precious metals and stones to make, repair, and adjust rings, necklaces, bracelets, earrings, and other jewelry. They use a variety of tools and materials. Jewelers use pliers, soldering irons, saws, and a variety of other hand tools to mold and shape metal and to set precious and semiprecious stones. They may also use chemicals and polishing compounds, such as flux for soldering and tripoli and rouge for finishing.

Gemologists examine precious stones such as diamonds, rubies, and emeralds to determine their genuineness, quality, and value. Knowledge of gems and market values is necessary. They examine gem surfaces and internal structure using devices such as polariscopes, refractometers, microscopes, and other optical instruments. Gemologists grade stones for color, perfection, and quality of cut. They estimate wholesale and retail value of gems. They follow pricing guides, market fluctuations, and various economic changes that affect distribution of precious stones. Gemologists may advise customers in use of gems to create attractive jewelry items.

D.O.T. Codes: 700.281-010, 199.281-010

Working Conditions

Jewelers usually work in comfortable surroundings, and the trade involves few physical hazards. However, those working with chemicals must take caution to prevent burns and other injuries. In addition, doing delicate work while trying to satisfy demands for speed and quality from customers and employers can cause stress. Bending over a workbench for long periods can be uncomfortable. Because many of the materials they work with are very valuable, those working in retail stores must observe strict security procedures.

Employers

Many are self-employed; others work for jewelry manufacturers, repair shops, or retail stores.

Physical Requirements

Good finger dexterity Spatial ability Form perception Average mechanical ability Personable

Helpful School Subjects

Mechanical Training Gemology
Physical Sciences Economics
Marketing

Additional Information

Length of this apprenticeship program is two and one-half to three years. Experience or some postsecondary training preferred. Some jewelers wait on customers. Business courses may be helpful. Highly competitive field. Those who can repair watches have an advantage since watch repairs account for much of the business in small stores. Certification as watchmaker is not required, but can be obtained through the American Watchmakers Institute. For more information, write to the American Watchmakers' Institute, 701 Enterprise Drive, Harrison, OH 45030.



Occupational Information

Current Employment

About 37 are employed in this very small occupation in Montana. In addition, others are self-employed. There were two active apprentices in Montana in 1995.

Wages

Designers, gemologists, goldsmiths, and silversmiths usually earn higher wages than repairers or production workers in jewelry manufacturing. Jewelers may work on commission or own a retail store. Some earn on a piecework basis and others earn an hourly wage. The average entry wage in Montana is \$8.25/hour; the average wage is \$8.88/hour. The average wage for gemologists in Montana is \$8/hour. Trainees often begin at minimum wage.

Outlook

Employment for jewelers is projected to increase faster than average in Montana. Employment for gemologists is projected to increase as fast as the statewide average. The outlook depends largely on jewelry sales and the demand for repair services. Jewelry is a luxury market affected by the size of the population and family incomes. The need to replace those who leave the occupation will create some openings. Competition is keen and people entering the trade may have trouble finding a job unless they can demonstrate their ability.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 3184 CIS for Windows - Jewelers

LEGAL SECRETARIES

Legal secretaries perform various clerical duties in the preparation of legal papers and correspondence. Legal secretaries type, take shorthand or use transcribing machines, maintain files, and perform other clerical duties. They may make initial drafts of legal documents. Other duties may include paying bills for witness and process fees, recording trial dates, scheduling the appearance of witnesses, delivering subpoenas, and helping with legal research.

D.O.T. Code 201.362-010

Working Conditions

Usually work 40 hours/week. Some work overtime to meet deadlines.

Employers

Law firms and government agencies; legal departments of large manufacturing, banking, insurance, and real estate firms.

Physical Requirements

Good verbal ability Good eye-hand coordination Good ability to make visual comparisons

Helpful School Subjects

Typing English Shorthand

Additional Information

Length of this apprenticeship program is one year. Most employers require a minimum accurate typing speed of 60-70 words per minute, a shorthand speed of 90-120 words per minute, and familiarity with legal terms. Good punctuation, grammar, and vocabulary skills are essential. Most employers require word processing skills and some require experience.



Occupational Information

Current Employment

About 664 are employed in this medium-sized occupation in Montana. There was one active apprentice in 1994. There were no active apprentices in Montana in 1995.

Wages

Legal secretaries earn an average of \$1,690/month. Legal secretaries earn more than other secretaries because of knowledge of terminology and other specialized skills. Pay levels in city and county governments vary with the location, size of budget, scope of responsibility, and complexity of the task.

Outlook

Employment for legal secretaries is projected to grow much faster than the statewide average for all occupations. The outlook is affected by productivity gains made possible through automation. With word processors and personal computers, secretaries can accomplish more work than they did in the past. Personal computers have enabled many more workers to do their own word processing than in the past, somewhat reducing demand for secretaries. Many job openings result from turnover and the need to replace workers who leave the occupation.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro- CIS - OCC 14422 CIS for Windows - Legal Secretaries

LINE INSTALLERS AND REPAIRERS

Utility line workers spend much of their time installing, maintaining, or repairing electric power lines. They must read and interpret service orders and circuit diagrams to determine proper installation or necessary repairs. Workers periodically check to make sure lines are clear of tree limbs or other obstructions that could cause problems. They also routinely check to make sure that insulation on cables is in good condition and that insulators and other equipment on line poles are working properly. Emergency repairs may have to be done as rapidly as possible.

Tree trimmers trim trees to clear right-of-way for communications lines and electric power lines to minimize storm and short-circuit hazards. They remove broken limbs from wires and fell trees interfering with power service.

D.O.T. Codes: 821.261-014, 821.361-026, 821.361.018, 408.664-010

Working Conditions

Utility line workers usually work outdoors in all kinds of weather. They must do a lot of climbing and lifting. They must wear safety equipment when entering manholes. These workers are subject to 24-hour call. At times they may have to work long and irregular hours to restore service. Travel to distant locations and lengthy stays may be necessary to help restore damaged facilities or build new ones.

Employers

Telephone companies, electrical utility firms, construction firms, and cable television firms.

Physical Requirements

Good physical condition
Good use of hands and fingers
Manual dexterity
Color discrimination
Ability to lift heavy objects and work in high places

Helpful School Subjects

Electrical Theory Math
Physical Education Electronics
Blueprint Reading

Union Affiliation

May or may not be affiliated with the International Brotherhood of Electrical Workers.

Additional Information

Length of these apprenticeship programs is three years. High school diploma or equivalent and minimum age of 18 years required. Background in mathematics. Good physical condition. Aptitude test may be required. Considerable danger of falls or electrical shock. Employment requires constant retraining. Often provide own belt, tools, and boots.



Occupational Information

Current Employment

About 715 are employed in this medium-sized occupation in Montana. There were 36 active apprentices in Montana in 1995.

Wages

The average entry wage in Montana for line repairers is \$12.56/hour; the average wage is \$17.59/hour. The average entry wage for line erectors is \$14.86/hour and the average wage is \$18.73/hour. The average entry wage for line installer-repairers is \$8.50/hour and the average wage is \$16.20/hour.

Outlook

Employment for electrical power line installers and repairers is projected to grow slower than the statewide average for all occupations in Montana. The outlook depends on technological developments, population trends, and the number of services that require transmission and distribution lines. Although these services are expected to expand, technological changes will limit occupational growth.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro- CIS - OCC 5624 CIS for Windows - Line Installers and Repairers

MACHINISTS

Machinists produce metal goods made in numbers too small to produce with automated machinery. They set up and operate most types of machine tools. Machinists must know the working properties of metals such as steel, cast iron, aluminum, and brass. They review blueprints or written specifications for a job, then select tools and materials. Machinists position metal stock on machine tools, set controls, and make cuts. To make sure their work meets specifications, they use precision instruments such as micrometers. They then finish and assemble pieces. Some machinists may repair parts for existing machinery.

Wood machinists produce goods from various types of wood. They set up and operate most types of machine tools. Knowledge of the working properties of different woods is necessary. Machinists review blueprints or written specifications for a job, then select tools and materials. Machinists position wood stock on machine tools, set controls, and make cuts. They use precision instruments such as micrometers to make sure their work meets specifications. Machinists finish and assemble pieces.

Automotive machinists repair automotive engine parts or units such as transmissions, differentials, springs, or brakes. They set up and operate many types of machine tools. Knowledge of the working properties of metals such as steel, cast iron, aluminum, and brass is necessary. Machinists position metal stock on machine tools, set controls, and make cuts. They use precision instruments such as micrometers to make sure their work meets specifications. Machinists finish and assemble pieces.

D.O.T. Codes: 600.280-022, 600.280-034, 669.380-014

Working Conditions

Most machine shops are well lighted and well ventilated. Working around high-speed machine tools presents certain dangers, and workers must follow safety practices. They wear protective equipment such as safety glasses and earplugs. The job requires stamina because machinists stand most of the day and may lift moderately heavy work pieces.

Employers

Manufacturers of machinery, fabricated metal products, and transportation equipment; machine shops; and auto repair shops.

Physical Requirements

Above average use of hands and eye-hand coordination Ability to follow complex directions

Helpful School Subjects

Machine Shop Physics
Mechanical Drawing Blueprint Reading Metallurgy
Math Electronics

Wood Shop

Union Affiliation

May or may not be affiliated with the International Association of Machinists and Aerospace Workers.

Additional Information

Length of this apprenticeship program is four years. High school diploma or equivalent and minimum age of 18 years required. Aptitude test required. Risk injury from high speed cutting tools, moving machinery, metal chips, and abrasive dust. Must supply own tools.



Occupational Information

Current Employment

About 584 are employed as machinists and 675 are employed as wood machinists. This is a medium-sized occupation in Montana. There were three active apprentices in Montana in 1995.

Wages

The average entry wage in Montana for machinists is \$6.74/hour; the average wage is \$10.27/hour. The average wage for wood machinists is \$10.23/hour. The average entry wage is \$7.22/hour and the average wage is \$9.57/hour for automotive machinists. In Montana state government, machinist/mechanics earn about \$11.50/hour.

Outlook

Employment is projected to grow as fast as the statewide average for all occupations in Montana. The outlook depends on technological changes and the amount of new machinery and machinery repairs needed by manufacturing industries, and foreign competition. Reduced growth results from substitution of non-metal parts in many products, increased imports of finished products, and technological changes that increase the output per worker. Most openings will arise from the need to replace those who leave the occupation.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs Micro-CIS - OCC 5464

CIS for Windows - Machinists

MEAT CUTTERS

Meat cutters and butchers divide poultry, meat, and fish into rounds, ribs, roasts, steaks, and chops with saws and knives. Bony pieces of meat are separated by hand saws, while boneless cuts are divided with slicers and power cutters. Butchers use the leftover trimmings to make ground beef and sausage. They may wait on customers and stock refrigerated meat cases.

D.O.T. Codes 525.381-014, 316.684-018

Working Conditions

Cold temperatures prevent meat from spoiling. These low temperatures and the need to stand for long periods of time require butchers and meat cutters to have physical stamina. They lift heavy pieces of meat--therefore, physical strength is necessary. Extra caution should be taken when operating power cutters and slicers.

Employers

Retail food stores, wholesale food distributors, meat packing plants, hotels and restaurants. Some are self-employed.

Physical Requirements

Stamina

Good color discretion

General good health

Agility, strong back

Free of communicable diseases

Good manual dexterity

Good eye-hand coordination

Helpful School Subjects

Speech Biology
Metal Shop Typing
English Math
Zoology Marketing

Retail Merchandising

Union Affiliation

May or may not be affiliated with the United Food and Commercial Workers International Union.

Additional Information

Length of this apprenticeship program is three years. High school diploma or equivalent and at least 18 years old preferred. Able to work in low temperatures for long periods on feet. Must usually pass a meat cutting test to become a journeyworker. Buttrey Food Stores conducts a statewide program operated by local stores.



Occupational Information

Current Employment

About 517 are employed in this medium-sized occupation in Montana. In addition, others are self-employed. There were nine active apprentices in Montana in 1995.

Wages

The average entry wage for meat cutters in Montana is \$5.78/hour and the average wage is \$9.65/hour. Meat cutters who are union members generally earn more than nonunion workers. The average wage for butchers is \$5.71/hour.

Outlook

Employment is projected to grow as fast as the statewide average for all occupations in Montana. The outlook depends on consumer demand for meat and the use of automated equipment to cut meat. Another factor is centralization of meat cutting operations. An ongoing shift away from consumption of red meat and the machine processing of poultry could reduce the opportunities for butchers. Central cutting requires fewer workers and permits meat cutters to specialize in specific types of meat and cuts, increasing efficiency. Most job openings will result from the need to replace workers who leave the occupation.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 4326 CIS for Windows - Meat Cutters

MILLWRIGHTS

Millwrights install and dismantle the machinery and heavy equipment used in almost every industry. They unpack new equipment and inspect it for damage and missing parts. They then move equipment into position, using rigging and hoisting devices or hydraulic lift-truck operators. Millwrights must know the load-bearing properties of ropes, cables, hoists, and cranes. Knowledge of blueprint reading and working with building materials such as concrete, wood, and steel is necessary. They fit bearings, align gears and wheels, attach motors, and connect belts according to blueprints and drawings. Millwrights use hand and power tools, cutting torches, welding machines, and soldering guns.

Powerhouse mechanics detect, identify, and correct any trouble that develops in the electrical and mechanical equipment used in power-generating stations. Mechanics may make special tools, rigging equipment, and replacement parts for equipment. They make repairs, ranging from a complete overhaul to replacing defective valves, gaskets, or bearings, using hand or power tools.

D.O.T. Codes: 638.281-018, 638.281-014, 631.261-014

Working Conditions

Millwrights employed by factories ordinarily work year round. Those employed by construction companies may experience periods of unemployment; however, pay is at a higher hourly wage rate. Millwrights who work for companies that manufacture and install machinery may travel a lot. They are subject to the usual shop hazards, such as cuts and bruises, associated with working around machinery. Injury from falling objects or machinery that is being moved, and from falls from scaffolding and catwalks are hazards. These hazards are reduced by the use of protective devices such as safety belts and hard hats.

Employers

Most manufacturers, including wood products and paper firms; companies that produce primary and fabricated metal products; canneries and food processors; machinery and equipment wholesalers; construction firms; power-generating plants.

Physical Requirements

Good manual dexterity and strength Motor coordination Mechanical ability

Helpful School Subjects

Mechanical Drawing Shop Courses
Blueprint Reading Welding
Physical Sciences Math

Union Affiliation

Millwrights may or may not be affiliated with the International Brotherhood of Carpenters. Powerhouse mechanics may or may not be affiliated with the International Brotherhood of Electrical Workers.

Additional Information

Length of this apprenticeship program is four years. Must be at least 18 years old. On-the-job training or seniority required--not an entry level occupation. Ability to lift and carry loads up to 50 pounds. Union affiliation depends on type of industry employment. Employment requires frequent retraining.



Occupational Information

Current Employment

About 389 are employed as millwrights and 218 are employed as powerhouse mechanics in Montana. There were nine active millwright apprentices and 11 active powerhouse mechanic apprentices in Montana in 1995.

Wages

The average entry wage in Montana is \$8.36/hour; the average wage is about \$11.19/hour. Millwrights covered by a union contract earn about \$13.90/hour, and powerhouse mechanics earn about \$18/hour. Union workers also receive a travel allowance ranging from \$.65 to \$1.25 per hour for working at varying distances from home. In Montana state government, wages for machinist/millwrights average \$12.35/hour.

Outlook

Employment is projected to decline for millwrights. Employment for powerhouse mechanics is projected to show little change. The outlook depends on the economy, increased use of technology and automation, and the amount of industrial and construction activity requiring machinery installation and repair. The demand for millwrights to install new machinery will be offset by the generally lower maintenance requirements of the new types of machinery. Decreased activity in many industries has decreased demand. Most job openings will arise from the need to replace those who leave the occupation. Opportunities will be best for those already working in maintenance departments as oilers or helpers, or for those working as laborers in the construction industry.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs Micro-CIS - OCC 3142

CIS for Windows - Millwrights

OFFICE MACHINE REPAIRERS

Office machine repairers maintain and repair machines used to process paperwork in business and government. These machines include typewriters, adding and calculating machines, cash registers, dictating machines, postage meters, and duplicating and copying equipment. They regularly visit offices and stores of customers to do preventive maintenance and make minor repairs. Serious problems may require that a part or entire machine be taken to the repair shop. They use common hand tools, as well as other tools that fit certain kinds of machines. Repairers use testing equipment to check for malfunctions in electronic circuitry.

D.O.T. Codes: 633.281-018, 633.281-010, 633.281-014

Working Conditions

Repairing office machines and cash registers is cleaner and less strenuous than the work in most other mechanical trades. Office machine repairers usually wear business clothes and do most of their work in the customer's place of business. They travel a great deal because they usually visit several customers each workday.

Employers

Firms that sell and service office equipment, independent repair shops.

Physical Requirements

Mechanical aptitude
Manual dexterity
Good physical condition
Good vision, color discretion

Helpful School Subjects

Blueprint Reading Math
Mechanical Drawing Welding
Physical Sciences Shop Courses
Electronics English

Additional Information

Length of this apprenticeship program is three years. High school diploma or equivalent and minimum age of 18 years preferred. Usually need a valid driver's license. Work available in both small and large towns. Bonding may be required. Must have a record of honesty. Occupation requires frequent retraining. Year-round employment. Opportunities for employment and advancement increase with training in electronics.



Occupational Information

Current Employment

About 265 are employed in this small occupation in Montana. There was one active apprentice in Montana in 1995.

Wages

The average entry wage for office machine repairers in Montana is \$6.08/hour; the average wage is \$9.91/per hour.

Outlook

Employment is projected to grow slower than the statewide average for all occupations in Montana. The outlook depends on the demand for office machines and on technological changes. The use of office machines in business and government is expected to increase to handle the growing volume of paperwork. Much of the new equipment is electronic; therefore, prospects are better for repairers who have training in electronics plus experience repairing office machines. The demand is greatest for those who can repair computerized equipment. Many employers prefer repairers who have experience and formal training, making entry difficult for inexperienced applicants.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 3164 CIS for Windows - Office Machine Repairers

PAINTERS

Painters use brushes, rollers, and spray guns to apply paint to a variety of surfaces. They have to prepare surfaces by removing grease and scale, or by resurfacing imperfections. Painters mix paints and match colors. They must have a knowledge of paint composition and color harmony. Painting and paper hanging are separate trades, but many persons do both as they are somewhat compatible.

D.O.T. Code 840.381-010

Working Conditions

Painters must have strong arms as much of their work is done overhead. The work consists of climbing and bending with long periods of standing. They risk injury from slips or falls of ladders and scaffolding when working from heights. Many are self-employed and can choose their hours and working conditions.

Employers

Painting, paperhanging, and other construction contractors; real estate firms; factories, schools, hospitals, and other organizations that hire their own maintenance workers. Many are self-employed.

Physical Requirements

Good eyesight Good physical condition, strong arms Manual dexterity Good color discretion Good balance

Helpful School Subjects

Art Chemistry English Math

Shop Courses

Licensing Requirements

- 1. Complete a contractor registration form.
- 2. Obtain a bond (not to exceed \$25,000) in an amount equal to average monthly payroll. The minimum amount is \$6,000 for a general contractor, and \$4,000 for a specialty contractor.
- 3. Provide proof of workers' compensation and unemployment insurance or provide proof of an independent contractor exemption with no employees.
- 4. Pay an \$80 registration fee.

Registration Renewal

Registrations expire one year from the date of registration.

Fees

Original/Annual renewal \$80

For Details and Certification Application Materials, Contact

Montana Department of Labor and Industry P.O. Box 8011 Helena, MT 59604-8011 (406) 444-7734

Union Affiliation

May or may not be affiliated with the International Brotherhood of Painters and Allied Trades.

Additional Information

Length of this apprenticeship program is three years. High school diploma or equivalent and minimum age of 18 years preferred. Should have no allergies to paint or other chemical fumes. Must be able to stand for long periods. Must be able to climb and bend.



Occupational Information

Current Employment

About 485 are employed in this medium-sized occupation in Montana. In addition, others are self-employed. Peak employment occurs in the summer months. There were four active apprentices in Montana in 1995.

Wages

The average entry wage in Montana is \$5.00/hour; the average is \$7.36/hour. The union rate for painters and tapers is \$12.40/hour plus travel allowance. Painters working in state government earn \$7.50-\$10.25/hour. Earnings are reduced by bad weather and the short-term nature of many jobs.

Outlook

Employment is projected to increase faster than the statewide average for all occupations in Montana. The outlook depends mainly on construction activity which, in turn, depends on loan interest rates, general economic conditions, and the weather. The number of job openings varies from season to season, although repainting houses and other buildings provides work throughout the year. Painters and paperhangers who develop skills in using many tools, paints, and wall coverings have the best chance of avoiding layoffs during seasonal downturns.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs Micro-CIS - OCC 4242

CIS for Windows - Painters and Paperhangers

PLUMBERS AND PIPEFITTERS

Plumbers install and repair the water, waste disposal, drainage, and gas systems in homes, commercial, and industrial buildings. They also install plumbing fixtures--bathtubs, sinks, and toilets--and appliances such as dishwashers and water heaters. Plumbers must be able to follow building plans and instructions and work efficiently with the materials and tools of the trade. They use saws, pipe cutters, and pipe-bending machines. They connect lengths of pipe with fittings, and may use solder and torches or adhesives.

Pipefitters install and repair both high- and low-pressure pipe systems used in manufacturing, in the generation of electricity, and in heating and cooling buildings. Some pipefitters specialize in one type of system. They must be able to follow building plans and instructions and work efficiently with the materials and tools of the trade. Pipefitters use saws, pipe cutters, and pipe-bending machines. They connect lengths of pipe with fittings, and may use solder and torches or adhesives. Pipefitters are also referred to as gas main fitters. They install, maintain, and repair pipe systems that carry gas to residences and other buildings.

D.O.T. Codes: 862.381-030, 862.281-022, 862.381-018, 862.361-014

Working Conditions

Plumbers and pipefitters need physical stamina because they frequently must lift heavy pipes and stand for long periods. They sometimes work in cramped and dirty places and may have to work outdoors in inclement weather. Plumbers can be injured by cuts from sharp tools and burns from hot pipes or from soldering equipment.

Employers

Plumbing and other construction contractors; some manufacturing firms, especially those that build and repair ships and aircraft; gas production and distribution companies; water supply systems; school districts; and government agencies. Some are self-employed.

Physical Requirements

Good physical condition Mechanical aptitude

Helpful School Subjects

English Math
Drafting Physics
Auto mechanics Welding
Wood and Metal Shops Chemistry

Licensing Requirements

For journeyworker plumbers:

- 1. Completion of an approved plumber apprenticeship program, or five years of plumbing experience.
- 2. Satisfactory completion of written and practical exams.

For master plumbers:

- 1. Four years of experience as a licensed journeyworker plumber.
- 2. Three years of experience in supervising plumbing projects.
- 3. Satisfactory completion of written and practical exams.

License Renewal

Licenses expire on August 31 of each year, and may be renewed upon payment of a fee.

Fees

Application	\$30
Exam	95
Original license/Annual renewal	
Journeyman	75
Master	125

Special Comments or Conditions

A special endorsement is required for persons installing medical gas piping. Contact the Board of Plumbers office for requirements.

For Details and Licensing Application Materials, Contact

Montana Board of Plumbers 111 N. Jackson, Lower Level PO Box 200513 Helena, MT 59620-0513 (406) 444-4390

Union Affiliation

May or may not be affiliated with the United Association of Plumbers and Pipefitters.

Additional Information

Length of this apprenticeship program is four years for plumbers and pipefitters, three years for gas main fitters. High school diploma or equivalent and minimum age of 18 years required. Aptitude test may be required. Considerable mechanical aptitude needed. May be seasonal work. May require considerable travel.



Occupational Information

Current Employment

About 732 are employed in this medium-sized occupation in Montana. In addition, others are self-employed. There were 151 active plumber apprentices and 16 active pipefitter apprentices in Montana in 1995.

Wages

Plumbers earn an average wage of about \$16.52/hour. Pipefitters (construction) earn an average wage of about \$11.87/hour. The union journey-level wage for plumbers, pipefitters, and sprinkler fitters in Montana is \$18.40/hour. Nonunion plumbers usually earn less. In Montana state government, plumbers earn \$8.25 to \$11.40/hour. Union apprentices earn 50 percent of the journey-level wage.

Outlook

Employment is projected to increase as fast as the statewide average for all occupations in Montana. The outlook depends mainly on the amount of commercial and residential construction. The level of construction activity, in turn, is affected by economic conditions and the weather. Maintenance of existing piping systems provides jobs for many plumbers and pipefitters even when construction work is down.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 4274 CIS for Windows - Plumbers and Pipefitters

PRINTING PRODUCTION WORKERS

Printing production workers include printing press operators, job printers, and bindery workers.

Printing press operators run printing presses in a pressroom. Operators set up and adjust presses to produce distinct and uniform printing impressions, making sure that paper and ink meet specifications. They then feed paper through the press cylinders, and adjust feed and tension controls. Operators check the presses as they run and correct problems as they occur. In some shops, press operators oil and clean the presses and make minor repairs.

Bindery workers operate machines that fold, glue, sew, or staple material after it leaves the printing shops. Bookbinders perform more complex binding tasks. They may round book backs, trim pages, or glue covers. Some bookbinders work in hand binderies designing original bindings or restoring and rebinding rare books.

D.O.T. Codes: 651.362-018, 651.362-030, 651.482-010, 973.381-018, 977.381-010

Working Conditions

Operating a press can be physically and mentally demanding. Press operators are on their feet most of the time. Most printing presses are capable of high printing speeds, and adjustments must be made quickly to avoid waste. Pressrooms are noisy, and workers in certain areas wear ear protectors. Safe working habits are emphasized because press operators are subject to hazards when working near machinery. During busy periods, overtime is common and there may be pressure to meet deadlines. Print shops are sometimes noisy. Newspapers may require shift and weekend work. Bindery work is performed in a noisy, factory-like atmosphere. Bookbinders and bindery workers must stand for long periods of time. They often lift and carry heavy packages.

Employers

Commercial printing firms, newspapers, private businesses, and large public agencies, bookbinding shops, bindery departments of book publishing firms, and large libraries.

Physical Requirements

Eye-hand coordination Manual dexterity Good color vision Ability to lift up to 100 pounds

Helpful School Subjects

Graphic Arts Math Chemistry Physics Mechanical Drawing English

Union Affiliation

May or may not be affiliated with the Billings-Missoula Printing and Graphics Communications Union (AFL-CIO) or the International Printing and Graphic Communications Union.

Additional Information

Length of the apprenticeship program for printing press operators and job printers is four years. Length of the apprenticeship program for bookbinders is three years. High school diploma or equivalent and minimum age of 18 years preferred. Ability to see detail and picture objects of two or three dimensions. Union shops work only through apprenticeship training programs.



Occupational Information

Current Employment

About 135 printing press machine operators, 73 job printers, and 83 bindery machine operators are employed in Montana. There were four active printing press machine operator apprentices in Montana in 1995.

Wages

The average entry wage in Montana for offset press operators is \$6.26/hour; the average is \$10.40/hour. The average entry wage for job printers is \$7.23/hour, the average wage is \$9.74/hour. The average entry wage for bookbinders is \$5.12/hour and the average wage is \$7.72/hour.

Outlook

Employment for job printers and bookbinders is projected to grow faster than the statewide average for all occupations in Montana. Employment for printing press operators is projected to increase faster than the statewide average. The outlook depends on automation and demand for printed materials. Many operations are being computerized, which affects some specialties more than others. In all areas of printing, new processes are changing the basic duties of each job. Workers who can adapt to these changes will fare best. Employment prospects are best in large cities where larger production companies are located. In smaller shops, workers must be versatile in all phases of printing and perform various tasks.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro-CIS - OCC 4766, 47666, 47668

CIS for Windows - Printing Production Workers, Press Operators, Bookbinders and Bindery Workers

RESPIRATORY THERAPISTS

Respiratory therapists treat patients with cardiorespiratory problems. Treatment may give temporary relief to patients with asthma or emphysema, or provide emergency care in cases of heart failure, stroke, drowning, or shock. The therapy worker's role is a highly responsible one. If a patient stops breathing for longer than three to five minutes there is little chance for recovery without brain damage. Therapists use various types of equipment for diagnosis, treatment, and patient management.

D.O.T. Code 079.361-010

Working Conditions

Because hospitals operate around the clock, therapists may work evenings, nights, or weekends. They spend long periods standing and walking between patients' rooms. In an emergency, they work under a lot of stress. Gases used by therapists are potentially hazardous because they are used and stored under pressure. Safety precautions and regular maintenance and testing of equipment reduce the risk of injury.

Employers

About 90 percent work in hospitals. Other employers include oxygen equipment rental companies, ambulance services, nursing homes, and home health agencies.

Physical Requirements

Above average manual dexterity Good general health

Helpful School Subjects

Health Biology Physics Math

Licensing Requirements

National Board of Respiratory Care certification. Respiratory therapists may be registered by the NBRC after graduating from an approved two-year program and passing exams. Respiratory therapy technicians may be certified by the NBRC by graduating from an approved one-year program, acquiring one year of experience, and passing an exam. For more information, contact the National Board of Respiratory Care, 8310 Nieman Rd., Lenexa, KS 66214; (913) 599-4200.

License Renewal

Licenses expire on May 1 of each year, and may be renewed upon payment of a fee and completion of 12 hours of continuing education.

Fees

Application \$60 Annual renewal 40

For Details and Licensing Application Materials, Contact

Montana Board of Respiratory Care Practitioners 111 N. Jackson, Lower Level Box 200513 Helena, MT 59620-0513 (406) 444-3091

Additional Information

Length of this apprenticeship program is two years. Post-high school training preferred. Holiday, weekend, and shift work is typical. Registration preferred by some employers.



Occupational Information

Current Employment

About 251 are employed in this small occupation in Montana. There was one active apprentice in Montana in 1995.

Wages

The average entry wage in Montana is about \$9.45/hour. The average wage is about \$11.69/hour. Therapists in Montana state government earn an average wage of \$12.52/hour. Respiratory therapy aides earn an average wage of \$7.27/hour.

Outlook

Employment is projected to grow faster than the statewide average for all occupations. There are more types of surgery at which respiratory therapists must be present. There are increasing numbers of people over 65 who have more heart and lung problems than the rest of the population. Opportunities exist for those with a four-year degree who have specialized in outpatient respiratory education or diagnosis and testing. Prospects are best for those who are registered.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro- CIS - OCC 2668 CIS for Windows - Respiratory Therapists

ROOFERS

Roofers install and repair various kinds of roofing materials. These include tar and gravel, rubber, slate shingles, and tiles. Roofers apply several layers of materials to roofs to make them waterproof. Some may also waterproof and damp-proof masonry and concrete walls and floors.

D.O.T. Code 866.381-010

Working Conditions

Roofers' work is strenuous. It involves heavy lifting, as well as climbing, bending, and kneeling. Roofers risk injuries from slips or falls from scaffolds, ladders, or roofs, and burns from hot materials. The roofing industry has one of the highest accident rates in the construction industries. Roofers work outdoors in all types of weather, particularly when making repairs.

Employers

Roofing and construction contractors, school districts, building supply stores. Many are self-employed.

Physical Requirements

Good balance Able to lift heavy weights Ability to climb, bend, squat, and work in high places Manual dexterity Eye-hand coordination

Helpful School Subjects

Physical Education Math

English Shop Courses

Mechanical Drawing

Licensing Requirements

- 1. Complete a contractor registration form.
- 2. Obtain a bond (not to exceed \$25,000) in an amount equal to average monthly payroll. The minimum amount is \$6,000 for a general contractor, and \$4,000 for a specialty contractor.
- 3. Provide proof of workers' compensation and unemployment insurance or provide proof of an independent contractor exemption with no employees.
- 4. Pay an \$80 registration fee.

Registration Renewal

Registrations expire one year from the date of registration.

Fees

Original/Annual renewal \$80

For Details and Certification Application Materials, Contact

Montana Department of Labor and Industry P.O. Box 8011 Helena, MT 59604-8011 (406) 444-7734

Union Affiliation

May or may not be affiliated with the United Union of Roofers, Waterproofers and Allied Workers or the United Brotherhood of Carpenters and Joiners.

Additional Information

Length of this apprenticeship program is three years. High school diploma or equivalent and minimum age of 18 years preferred. Related work experience preferred. Work is seasonal. May require considerable travel.



Occupational Information

Current Employment

About 176 are employed in this small occupation in Montana. In addition, many others are self-employed. Peak employment occurs during the summer. There were 20 active apprentices in Montana in 1995.

Wages

Workers who are members of unions generally earn more than nonunion workers. The average union journey-level wage for roofers in Montana is \$11.50/hour. Winter weather reduces earnings.

Outlook

Employment is projected to grow faster than the statewide average for all occupations in Montana. The outlook depends mainly on the amount of new commercial and residential construction and the number of buildings that need new roofs. Employment of roofers is less sensitive to ups and downs in the economy than other construction occupations. Repair work on existing buildings creates a fairly steady demand for roofers. Seasonal slowdowns affect the work of roofers more than most construction occupations. Thus, jobs are easiest to find in the spring and summer when most roofing is done.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs Micro- CIS - OCC 4278

CIS for Windows - Roofers

ROTARY DRILLERS

Rotary drillers set up and level portable drilling rigs to drill water wells, using hand tools and power tools. They operate drill rigs that drill or punch a well bore. Operators record drilling progress and important geological data. They maintain their equipment by splicing worn or broken cable as necessary. Operators make well casings and build up worn drill bits, using cutting and welding equipment.

D.O.T. Code 859.362-010

Working Conditions

Rotary drillers work outside in all kinds of weather. Noise from drills can be extreme. Safety precautions must be observed when drilling.

Employers

Independent companies that contract to drill wells. Many water well drillers are self-employed; others work for well-drilling firms.

Physical Requirements

Mechanical aptitude Physical stamina

Helpful School Subjects

Blueprint Reading Math Machine Shop Geology

Licensing Requirements

- 1. Provide verification of one or more years' experience in drilling monitoring wells within the four years preceding application.
- 2. Is a licensed water well contractor or is engaged in installing monitoring wells.
- 3. Successful completion of exam.
- 4. Contractors and constructors must provide a bond.

License Renewal

Licenses expire on June 30 of each year, and may be renewed upon payment of a fee. Licensees must have a minimum of four hours of board approved training prior to license renewal each year.

Fees

Appl	ication

Contractors	\$275
Drillers	165
Monitoring well constructor	165

Re-examination

Contractors	125
Drillers	75
Monitoring well constructor	75

Renewal

Contractor	140
Driller	90
Monitoring well constructor	140

For Details and Licensing Application Materials, Contact

Montana Board of Water Well Contractors 1520 East 6th Avenue Helena, MT 59620 (406) 444-6643

Additional Information

Length of this apprenticeship program is two years. High school diploma required. Should be able to work independently. Geological training helpful.



Occupational Information

Current Employment

About 165 are employed in this small occupation in Montana. In addition, others are self-employed. There was one active apprentice in Montana in 1995.

Wages

Drill operators in Montana state government earn from \$8.05 to \$9.95/hour. The journey-level union wage rate for wagon drillers in Montana is \$12.75/hour. Workers who are union members generally earn more than nonunion members. Owner-operators may earn more.

Outlook

Employment is projected to grow about as fast as the statewide average for all occupations. Opportunities for water well drillers depend primarily on the demand for new wells, and somewhat on the need to maintain and deepen existing wells. Demand for new wells is closely related to the general level of construction activity. Job opportunities are best in spring and summer.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs Micro- CIS - OCC 4664

CIS for Windows - Rotary Drillers

SAW FILERS

Saw filers repair bandsaws, handsaws, and circular saw blades according to specifications. They examine saws for defects and cut broken teeth from saws, using power shears. Filers form teeth on saw blades by beveling joints on grinders and welding or brazing them together, straighten, and adjust blades. They use hand tools, machine tools, and welding equipment.

D.O.T. Code 701.381-014

Working Conditions

Repair shops are quiet, well lighted, and adequately ventilated. The work is usually safe, but filers must be careful and follow safety precautions when operating machine tools. Saw filers usually work with little or no direct supervision.

Physical Requirements

Manual dexterity
Eye-hand coordination
Spatial and form perception

Helpful School Subjects

Machine Shop Math

Metallurgy Woodworking Blueprint Reading Drafting

Additional Information

Length of this apprenticeship program is three years. Minimum age of 18 years preferred. Noise levels may be high. Risk of injury from sharp saws.



Occupational Information

Current Employment

About 116 are employed as tool grinders, filers and sharpeners in this small occupation in Montana. There was one active apprentice in Montana in 1995.

Wages

The average entry wage is \$10.19/hour and the average wage is \$12.36/hour.

Outlook

Employment is projected to show little change.

SHEET METAL WORKERS

Sheet metal workers make, install, and maintain sheet metal products. These include kitchen equipment, roofs, siding, rain gutters, skylights, and outdoor signs. They perform the work according to job orders or blueprints. Workers use metalworking and welding equipment and hand tools, and bolt, weld, rivet, or solder pieces to make finished products.

Architectural sheet metal workers construct and assemble structural metal products. These products include framework or shells for machinery, ovens, tanks, stacks, and metal parts for buildings and bridges. Workers perform work according to job orders or blueprints. They use metalworking and welding equipment and hand tools. They bolt, weld, rivet, or solder fabricated pieces to make a finished product.

Sheet metal service workers install, service and repair air conditioning and heating equipment. They use knowledge of refrigeration theory, pipefitting, and structural layout. Workers may make, assemble, and install ductwork and chassis parts using metalworking and welding equipment and hand tools.

D.O.T. Codes: 804.281-010, 619.361-014, 637.261-014

Working Conditions

Sheet metal workers work in shops that are well lighted and well ventilated. They stand for long periods of time and may have to lift heavy materials and finished pieces. Working around high-speed machines can be dangerous, and workers must follow safety practices. Some may work installing equipment on location for customers. Those doing installation work do considerable bending, lifting, standing, climbing, and squatting. They sometimes work in close quarters or in awkward positions. They may get cuts and burns from materials and tools. Most architectural sheet metal workers work indoors. Workers often work in awkward or cramped positions. The work may entail considerable bending, lifting, and standing. They sometimes work high above the ground. There is some danger of cuts from sharp objects. Sheet metal service workers work anywhere there is climate control equipment. They may work outside in cold or hot weather or in buildings that are uncomfortable because the air-conditioning or heating equipment is broken. In addition, workers often work in awkward or cramped positions and sometimes work in high places. Hazards include electrical shock, burns, muscle strains, and other injuries from handling heavy equipment.

Employers

Plumbing, heating, air conditioning, and other construction contractors; manufacturers of metal products, machinery, transportation equipment, and electrical and electronic equipment. Very few are self-employed.

Physical Requirements

Average numerical ability
Finger and manual dexterity
Good physical condition
Mechanical aptitude
High degree of precision
Ability to work in high places

Helpful School Subjects

Mechanical Drawing Welding
Metal Shop Math
Shop Electronics Physics
Blueprint Reading

Union Affiliation

May or may not be affiliated with the Sheet Metal Workers' International Association.

Additional Information

Length of this apprenticeship program is three to four years. High school diploma or equivalent and minimum age of 18 years preferred. Competition is keen. For information on nature of work, wages, methods of preparation, and on-the-job training, write the National Training Fund, Sheet Metal and Air Conditioning Industry, 601 N. Fairfax Street, Suite 240, Alexandria, VA 22314.



Occupational Information

Current Employment

About 234 are employed as sheet metal workers in this small occupation in Montana. About 96 are employed as structural metal fabricators in Montana. There were 44 active sheet metal worker apprentices in Montana in 1995.

Wages

The average entry wage for sheet metal workers in Montana is \$7.03/hour; the average wage is \$10.18/hour. Those covered by union contracts earn about \$16/hour. Union apprentices earn 40 percent of the journey-level age. The average wage for architectural sheet metal workers is \$10.48/hour.

Outlook

Employment for sheet metal workers is projected to grow much faster than the statewide average for all occupations in Montana. Employment for architectural sheet metal workers is projected to grow as fast as the statewide average. The outlook depends on the demand

for sheet metal products and on construction activity, including renovation and maintenance. Construction activity is sensitive to loan interest rates, economic conditions, and the weather. Work tends to be fairly steady in production jobs building ships, railroad cars, restaurant equipment, and temperature or pollution control systems. Some construction sheet metal workers find work in production during the winter months.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro- CIS - OCC 5484 CIS for Windows - Sheet Metal Workers

SIGN ERECTORS

Sign erectors secure preassembled illuminated signs onto buildings or other structures. Erectors use sketches, drawings, or blueprints. They make electrical connections and test signs for correct operation. Erectors use hand tools, power tools, and welding equipment. Some may make signs according to certain specifications.

D.O.T. Code 869.381-026

Working Conditions

Sign erectors must have strong arms as much of their work is done overhead. Some of the work may require climbing and bending with long periods of standing. They risk injury from slips or falls of ladders and scaffolding when working from heights. Many are self-employed and can choose their hours and working conditions.

Physical Requirements

Good physical condition Able to lift heavy objects Good balance

Helpful School Subjects

Arithmetic Drafting
Electrical Theory Electronics
Physical Education Woodworking

Additional Information

Length of this apprenticeship program is four years. Minimum age of 18 years preferred. Knowledge of construction methods and materials preferred. Work often performed outdoors. Considerable danger of falls and burns.



Occupational Information

Current Employment

This is a small occupation in Montana. Some are self-employed. There was one active apprentice in 1994 in Montana. There were no active apprentices in Montana in 1995.

Wages

The average wage for sign erectors in Montana is about \$10.04/hour.

Outlook

Employment is projected to grow slower than the statewide average for all occupations in Montana.

STATIONARY ENGINEERS

Stationary engineers, or boiler operators, start up and shut down equipment to meet demands for power. They insure that the equipment is operating economically and within set up limits. They monitor meters, gauges, and other instruments attached to equipment and adjust whenever necessary. Stationary engineers keep a log of all facts about the operation and maintenance of equipment. These workers must detect, identify, and correct any trouble that develops. They use hand or power tools to make repairs. Routine maintenance on equipment is a job duty.

D.O.T. Codes: 950.382-026, 950.382-010

Working Conditions

Engine rooms, powerplants, and boiler rooms are usually clean and well lighted. Stationary engineers are exposed to high temperatures, dust, dirt, and high noise levels from equipment. General maintenance duties may cause contact with oil and grease, and fumes or smoke. Workers are on their feet for long periods of time. They may have to crawl inside boilers and work in crouching or kneeling positions to inspect, clean, or repair equipment. They must be alert to avoid burns, electric shock, and injury from moving parts.

Employers

Sawmills, planing mills, plywood mills, hospitals, engineering services firms, colleges and universities, office buildings, hotels, apartment buildings.

Physical Requirements

Mechanical aptitude Manual dexterity Good physical condition

Helpful School Subjects

Mechanical Drawing Chemistry
Machine Shop Physics
Applied Electricity

Licensing Requirements

- 1. Minimum age of 18 years.
- 2. Experience with equipment in the class for which licensure is sought:

License Experience Required
Low pressure 3 months Steam not in excess of 15 pounds per square inch; Water not in excess of 50 pounds per square inch.

Third class 6 months Steam not in excess of 100 pounds per

square inch; Water not in excess of 160

pounds per square inch, and 350 degrees F.

Steam not in excess of 250 pounds per inch;

Water not in excess of 375 pounds per square inch, and 450 degrees F.; Steam-driven machines not in excess of 100

horsepower/unit.

First class 3 years All types

Traction 6 months Traction engines

Agricultural none Steam not in excess of 150 pounds per

square inch, not operated more than 6 months of the year, and only operated for harvesting and processing of agricultural

products

3. Satisfactory completion of a written exam.

2 years

License Renewal

Licenses expire one year from the date of issue, and may be renewed upon payment of a fee.

Fees

Original license:

Second class

Low pressure	\$40
Third class	40
Second class	50
First class	60
Traction	40
Agricultural	40
Annual renewal	16

For Details and Licensing Application Materials, Contact

Montana Department of Commerce Professional and Occupational Licensing Bureau 111 N. Jackson, Lower Level PO Box 200513 Helena, MT 59620-0513 (406) 444-1653

Union Affiliation

May or may not be affiliated with the International Union of Operating Engineers.

Additional Information

Length of this apprenticeship program is three years. High school diploma or equivalent and minimum age of 18 years preferred. Shift work is common.



Occupational Information

Current Employment

There are 4,387 licensed stationary engineers in Montana. There was one active apprentice in Montana in 1995.

Wages

The average wage in Montana is \$11.76/hour. The average wage in Montana state government is \$11.20/hour. Union workers usually earn more than nonunion workers.

Outlook

Employment is projected to show little change. The outlook depends on technological change, the need for mechanical and electrical power, and the need to replace workers who leave the occupation. The increasing use of more advanced equipment reduces the demand for those with limited skills. Stationary engineers and boiler operators who combine operating with maintenance mechanic skills will fare better. Applicants able to work less desirable shifts have an advantage. The outlook is best for those who are trained in the use of computerized controls and instrumentation.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro- CIS - OCC 5944 CIS for Windows - Stationary Engineers

TAXIDERMISTS

Taxidermists mount skins of birds, fish, and animals in lifelike form. With special knives, scissors, and pliers, they remove skins, taking care to preserve hair and feathers. Skins are preserved by rubbing chemical solutions into them, then taxidermists fit skins to forms using adhesive or modeling clay. Taxidermists finish specimens by placing eyes and claws, dress feathers, and brush furs. They may use paints on fish mounts.

D.O.T. Code 199.261-010

Working Conditions

Taxidermists work inside shops that are well lighted. They must use caution when working with chemicals to prevent burns and other injuries. Some of the work is very detailed, and taxidermists may bend over a workbench for long periods.

Physical Requirements

Manual dexterity
Good vision, color perception
Able to lift heavy weights
Spatial ability
Form perception
Personable

Helpful School Subjects

Physical Sciences Art Biology

Licensing Requirements

Request application from the Department of Fish, Wildlife and Parks.

License Renewal

Licenses expire on April 30 of each year, and may be renewed upon payment of a fee.

Fees

Original license \$15 Annual renewal 15

For Details and Licensing Application Materials, Contact

Department of Fish, Wildlife and Parks Enforcement Division 1420 East Sixth Ave. P.O. Box 200701 Helena, MT 59620-0701 (406) 444-2452

Additional Information

Length of this apprenticeship program is three years. Many are self employed. Must endure odors from specimens and preserving chemicals.



Occupational Information

Current Employment

There are currently 369 licensed taxidermists in Montana. There was one active apprentice in Montana in 1995. Most taxidermists are self-employed.

Wages

Wages vary with season, location and experience.

TELEPHONE INSTALLERS AND REPAIRERS

Telephone installers and repairers install, service, and repair telephones, switchboards, and other communications equipment. Telephone installers and repairers install, relocate, and remove telephones and private branch exchange (PBX) systems in homes and offices. They connect the equipment to outside service wires on buildings or poles. They perform tests to check installations, locate problems, and fix equipment.

Central office equipment installers set up the complex switching and dialing equipment used in central offices of telephone companies. They install equipment in new offices, add equipment in expanding offices, or replace outdated equipment.

Central office craft workers maintain and repair the equipment. Most specialize in one of three areas: frame wiring, central office repair, or trouble shooting. In small companies, they perform all of these jobs.

Trouble locators locate malfunctions in telephone or telegraph lines. They use switchboards composed of electrical testing instruments. Locators report the nature of trouble to inside and outside maintenance crews and direct and coordinate trouble-clearing activities. They may contact subscribers to investigate reported trouble.

Private branch exchange installers install telephone switchboards and specialized communication equipment, such as telephoto circuits, mobile radiotelephones, and teletypewriters. Installers locate equipment on customers' premises. They connect telephone or telegraph cable terminals to wires and switchboards, following diagrams. They use hand tools, soldering irons, and wrap guns. Installers test and adjust installations using voltmeters, ammeters, and test telephone sets.

Line maintainers install, maintain, and repair telephone, telegraph and electrical power lines between installations of industrial plant.

D.O.T. Codes: 822.381-014, 822.361-030, 822.361-014, 822.381-018, 821.261-014, 822.261-022

Working Conditions

Line installers-repairers usually work outdoors in all kinds of weather. They must do a lot of climbing and lifting, and often work in stooped and cramped positions. They must wear safety equipment when entering manholes. These workers are subject to 24-hour call. At times they may have to work long and irregular hours to restore service. They may travel to distant locations and occasionally stay for a lengthy period to help restore damaged facilities or install new ones. To cope with emergencies that may arise, trouble locators may be on 24-hour call. They generally work in clean, well-lighted, air-conditioned surroundings. Many central office workers have work schedules that include shifts, weekends, and holidays. Because older central office equipment continually produces sounds, these workers must learn to "block out" noise. Many workers wear earplugs to help them do this.

Private branch exchange installers usually work in clean, well-lighted, air-conditioned surroundings. Depending on the job, they may have to stand for long periods, climb ladders, and do some reaching, stooping, and light lifting. They must take precautions to avoid electrical shocks.

Employers

Telephone companies. Most central office equipment installers work for manufacturers of the equipment.

Physical Requirements

Excellent health
Ability to lift heavy objects
Good color discretion
Strong
Ability to work in high places

Helpful School Subjects

Electrical Theory Electronics Physical Education Math

Union Affiliation

May or may not be affiliated with the International Brotherhood of Electrical Workers.

Additional Information

Length of this apprenticeship program is four years. High school diploma or equivalent and minimum age of 18 years preferred. May require aptitude test and math background. Requires constant retraining. May work long and irregular hours. Inexperienced workers often hired.



Occupational Information

Current Employment

About 554 are employed as telephone station installers and repairers in Montana. There are about 218 central office and PBX installers employed in Montana. There were eight central office installer, one trouble locator, one telephone line installer-repairer and one private branch exchange installer apprentices active in Montana in 1995.

Wage

The average entry wage for central office repairers is about \$9.25/hour and the average wage for experienced central office repairers is \$18.61/hour. The average entry wage for experience telephone station installers and repairers is \$12.56/hour and the average wage is \$17.59/hour.

Outlook

Employment is projected to show no change in Montana. The outlook depends on the use of telephone services by private consumers and industry, the entrance of new companies into the market, and technological changes. The change from electro- mechanical equipment to entirely electronic, computerized, highly automated equipment has reduced the role of equipment repairers. Many telephone companies are reducing the number of service centers, and laying off employees.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro- CIS - OCC 3166 CIS for Windows - Telephone Installers and Repairers

TRUCK AND HEAVY EQUIPMENT MECHANICS

Construction equipment mechanics work on large equipment such as cranes, bulldozers, graders, and conveyors. Construction, logging, and surface mining businesses use this equipment. Businesses cannot afford to have their machinery broken down for very long. Therefore, mobile heavy equipment mechanics must be able to determine the problem quickly and fix it effectively. They use a variety of tools in their work, such as common hand tools and power tools, and a variety of testing equipment.

Fuel injection servicers repair and rebuild fuel injection units. These units are used on diesel engines, railroad locomotives, trucks, construction equipment, tractors, and power plants. Servicers use a variety of tools in their work, such as common hand tools and power tools, and a variety of testing equipment.

Industrial truck mechanics repair and maintain diesel engines that power heavy trucks. In many repair shops, mechanics do all kinds of repair work. They use a variety of tools in their work, such as pneumatic wrenches, machine tools, welding and flame-cutting equipment, common hand tools, jacks, and hoists. Mechanics use a variety of testing equipment.

Diesel engine mechanics repair and maintain diesel engines that power transportation equipment, such as heavy trucks, buses, and locomotives; construction equipment such as bulldozers, cranes, and road graders; and farm equipment such as tractors and combines. In many repair shops, mechanics do all kinds of repair work. They use a variety of tools in their work, such as pneumatic wrenches, machine tools, welding and flame-cutting equipment, common hand tools, jacks, and hoists. They also use a variety of testing equipment.

D.O.T. Codes: 620.261-022, 625.281-022, 620.281-050, 625.281-010

Working Conditions

Many construction equipment mechanics work mostly indoors in shops, but others work as field service mechanics and spend much of their time away from the shop working outdoors. Mechanics handle greasy and dirty parts and often work in awkward or cramped positions. They frequently must lift heavy tools and parts. Mechanics are subject to burns, bruises, and cuts from hot engine parts and sharp edges of machinery. Industrial truck mechanics usually work indoors, although they may occasionally work or make repairs on the road. Most fuel injection servicers work as field service mechanics and spend much of their time away from the shop working outdoors. Diesel engine mechanics usually work indoors, although they may occasionally work or make repairs on the road.

Employers

Many types of firms, including heavy equipment and truck wholesalers; trucking firms; construction contractors; railroads; logging, lumber, and wood products companies; local bus companies; and repair shops. Many are self-employed.

Physical Requirements

Good physical condition Able to lift heavy weights Good manual dexterity

Helpful School Subjects

Blueprint Reading Math
Machine Shop Chemistry
Auto Mechanics Physics
Mechanical Drawing Welding

Basic Electricity

Union Affiliation

May or may not be affiliated with the International Association of Machinists and Aerospace Workers or the International Brotherhood of Operating Engineers.

Additional Information

Length of the apprenticeship program is four years. Length of the apprenticeship program for fuel injection servicers is three and a half years. High school diploma and postsecondary technical training and minimum age of 18 years preferred. Most provide own hand tools. Tools cost between \$3,000 and \$4,000. Automobile mechanic experience preferred.



Occupational Information

Current Employment

About 1,781 are employed in this medium-sized occupation in Montana. In addition, others are self-employed. There was one active industrial truck mechanic and 5 active diesel engine mechanic apprentices in Montana in 1995.

Wages

The average entry wage in Montana for diesel mechanics is \$8.30/hour; the average wage is \$10.86/hour. The average entry wage for construction equipment mechanics is \$9.51/hour and the average wage is \$11.95/hour. Union journey-level wages in Montana range from \$9 to \$15.20/hour. State government jobs pay an average wage of \$8.60/hour. Construction equipment mechanics for county governments in Montana average \$12.50/hour.

Outlook

Employment for bus and truck mechanics and diesel mechanics is projected to increase as fast as the statewide average for all occupations in Montana. Employment for mobile heavy equipment mechanics is projected to increase slower than the average. The outlook depends on the use of trucks in transporting freight, logging, and construction. Most job openings will arise from the need to replace those who leave the occupation. Truck mechanics who are able to perform all phases of the work and who can work on many types of trucks will have the best job prospects. Diesel mechanics who complete formal training have the best job prospects.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro- CIS - OCC 3114

CIS for Windows - Truck and Heavy Equipment Mechanics

WELDERS

Welders use gas or arc welding equipment to join two or more pieces of metal together. They use welding equipment to cut metal pieces to the correct size and shape in preparation for the welding process. Welders need knowledge of proper tip size and gas pressure in gas welding, or proper welding rod and amperage setting in arc welding to be sure of proper bonding. They must carefully check the welding process to prevent overheating of the parts being welded. Welders may construct items following blueprints or oral instructions.

D.O.T. Code 819.384-010

Working Conditions

Welders are exposed to several hazards. They use protective clothing, safety shoes, goggles, helmets with protective lenses, and other devices to prevent burns and eye injuries. Some metals give off toxic gases and fumes as they melt. Workers are often in contact with rust, grease, and dirt on metal surfaces. They may have to move and hold heavy beams or pipes being welded. They often work by themselves.

Employers

Manufacturers of machinery, metal products, transportation equipment, and lumber and wood products; construction companies; machine shops. Very few are self-employed.

Physical Requirements

Manual dexterity Good eye-hand coordination Physical condition Good eyesight

Helpful School Subjects

Blueprint Reading Math
Mechanical Drawing Metallurgy
Machine Shop Welding

Licensing Requirements

Licensing is not required, but certification, which involves practical exams and payment of a fee, is required for some specialized welding jobs such as bridges, where the strength of the weld is important. The exam is usually given by the employer or a government agency.

Union Affiliation

Over half are union members; most of them are members of the International Association of Machinists and Aerospace Workers.

Additional Information

Length of this apprenticeship program is two years. High school diploma or equivalent and minimum age of 18 years preferred. Formal training preferred. Courses listed above will improve chances for getting an entry-level job.



Occupational Information

Current Employment

About 925 are employed in this medium-sized occupation in Montana. There was one active apprentice in 1994. There were no active apprentices in Montana in 1995.

Wages

In Montana, the average entry wage for combination welders is \$8.80/hour, the average wage is \$11.19/hour. Production line solderers and apprentices earn \$4.50-\$5.50/hour. Arc welders earn an average of \$12.04/hour and gas welders earn an average of \$9.07/hour.

Outlook

Employment is projected to increase faster than average in Montana. The outlook depends on the activity level in the machinery, transportation equipment, metal products, construction, and wood products industries. Growth will be limited by the increased use of robotics and other technological changes which reduce the demand for welders. Most openings will result from the need to replace those workers who leave the occupation. Prospects are best for experienced welders who are familiar with current welding techniques and materials.

For more information, see the Montana Career Information System (MCIS): Computer Software Programs

Micro- CIS - OCC 5492 CIS for Windows - Welders